

KIC 009099927

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
009099927-01	OBS	No	2.755361	133.864053	19.1	14.513	8.9	7.2	2.58	6837	1.34	7078.97
009099927-02	OBS	No	237.856942	363.625022	149.4	15.485	10.6	4.7	2.58	6837	3.40	18.55
009099927-03	OBS	No	20.324537	134.048496	45.8	22.262	10.1	4.7	2.58	6837	2.00	493.00
009099927-04	OBS	No	126.535257	197.832532	190.1	30.693	16.9	6.7	2.58	6837	4.03	43.05
009099927-05	OBS	No	103.799709	205.409690	205.0	2.830	8.0	8.6	2.58	6837	4.45	56.05

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009099927-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
009099927-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009099927-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
009099927-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
009099927-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

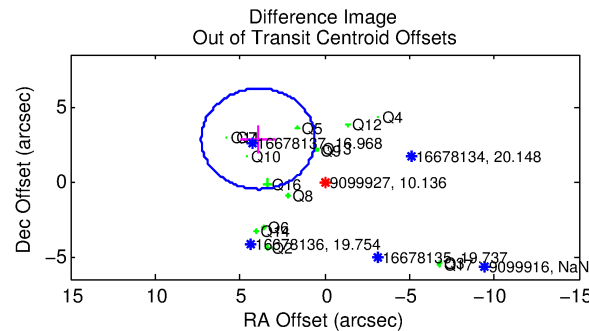
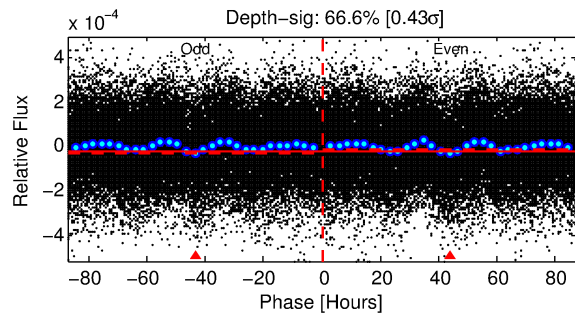
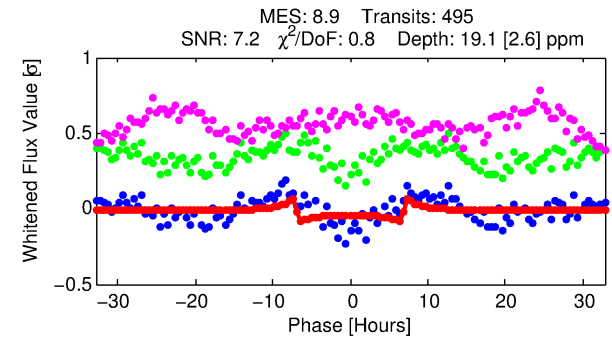
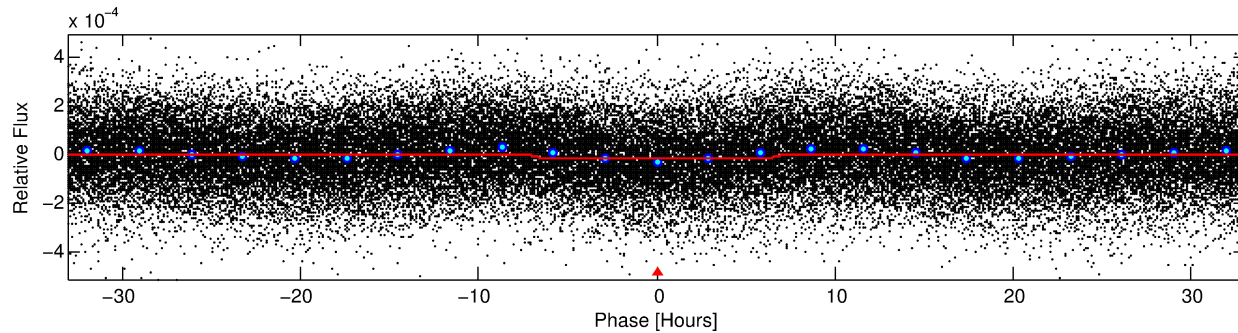
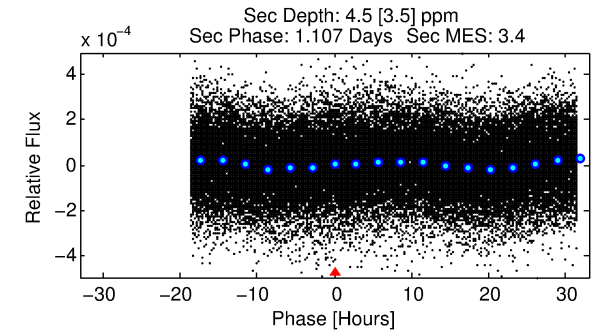
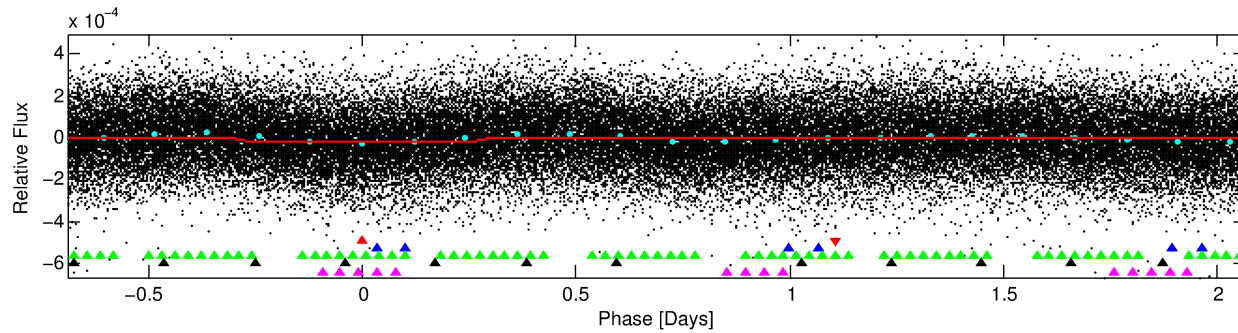
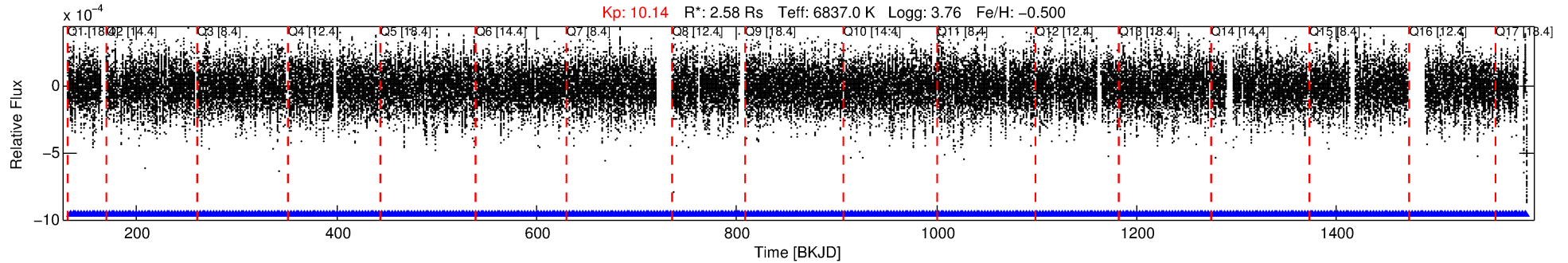
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009099927-01

No Significant Match Found

DV One-Page Summary

KIC: 9099927 Candidate: 1 of 5 Period: 2.755 d



DV Fit Results:

Period = 2.75536 [0.00003] d
Epoch = 133.8641 [0.0060] BKJD
 R_p/R^* = 0.0048 [0.0005]
 a/R^* = 1.11 [0.09]
 b = 0.93 [0.06]
 S_{eff} = 7078.97 [3999.02]
 T_{eq} = 2339 [330] K
 R_p = 1.34 [0.53] R_e
 a = 0.0428 [0.0151] AU
 A_g = 2.50 [2.43] [0.62σ]
 T_{eff} = 4549 [919] K [2.26σ]

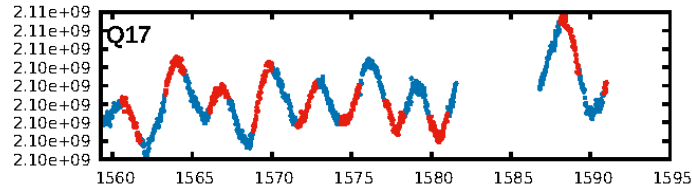
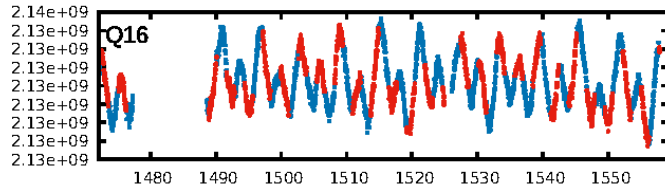
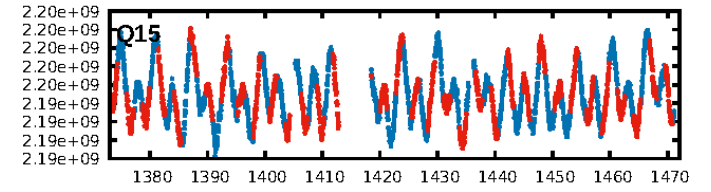
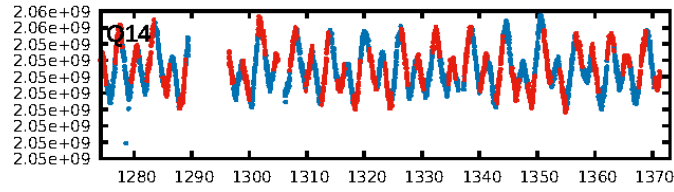
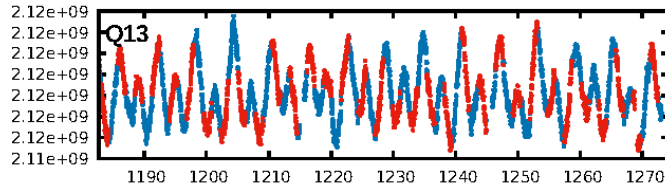
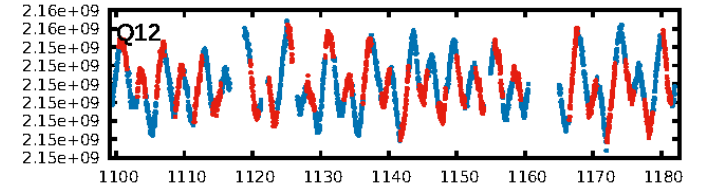
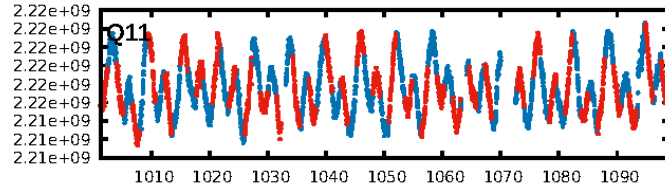
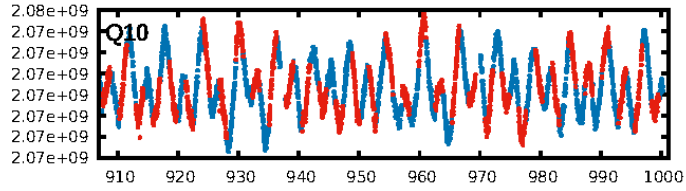
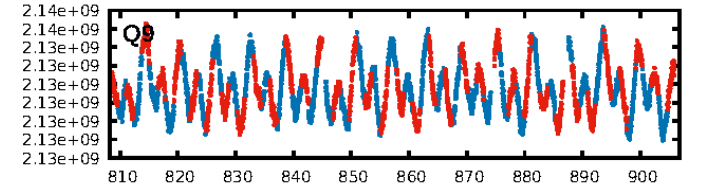
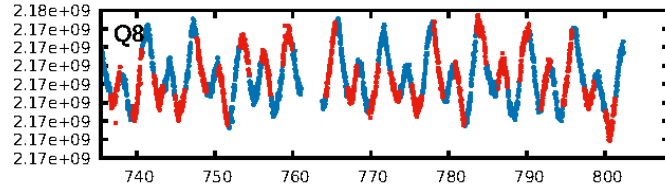
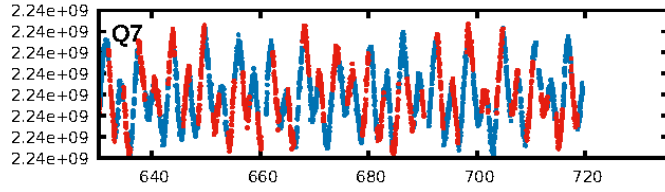
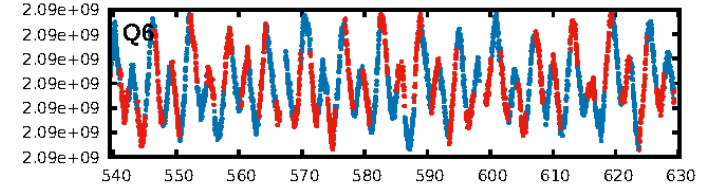
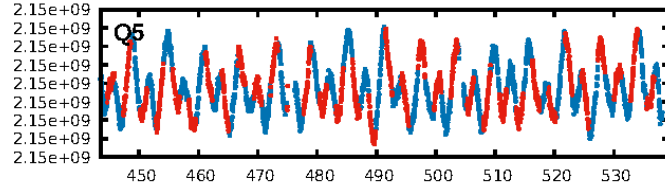
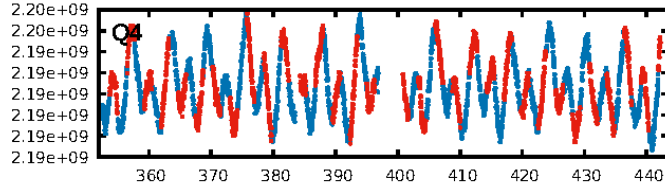
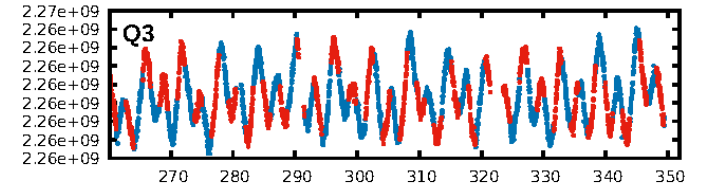
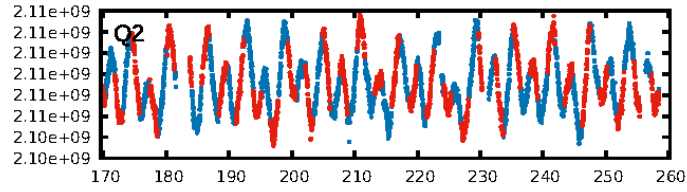
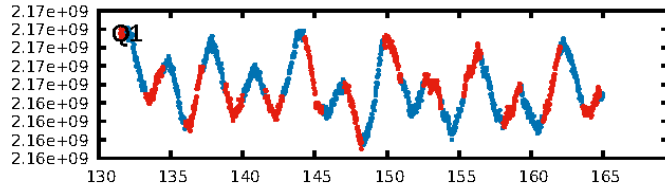
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [15.87σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 9.90e-10
RollingBand-fgt: 1.00 [474/474]
GhostDiagnostic-chr: N/A
Centroid-sig: 0.1%
Centroid-so: 1.222 arcsec [2.06σ]
OotOffset-rm: 4.853 arcsec [4.34σ]
KicOffset-rm: 3.515 arcsec [4.83σ]
OotOffset-st: 4/3/4/5 [16]
KicOffset-st: 4/3/4/5 [16]
DiffImageQuality-fgm: 0.19 [3/16]
DiffImageOverlap-fno: 1.00 [17/17]

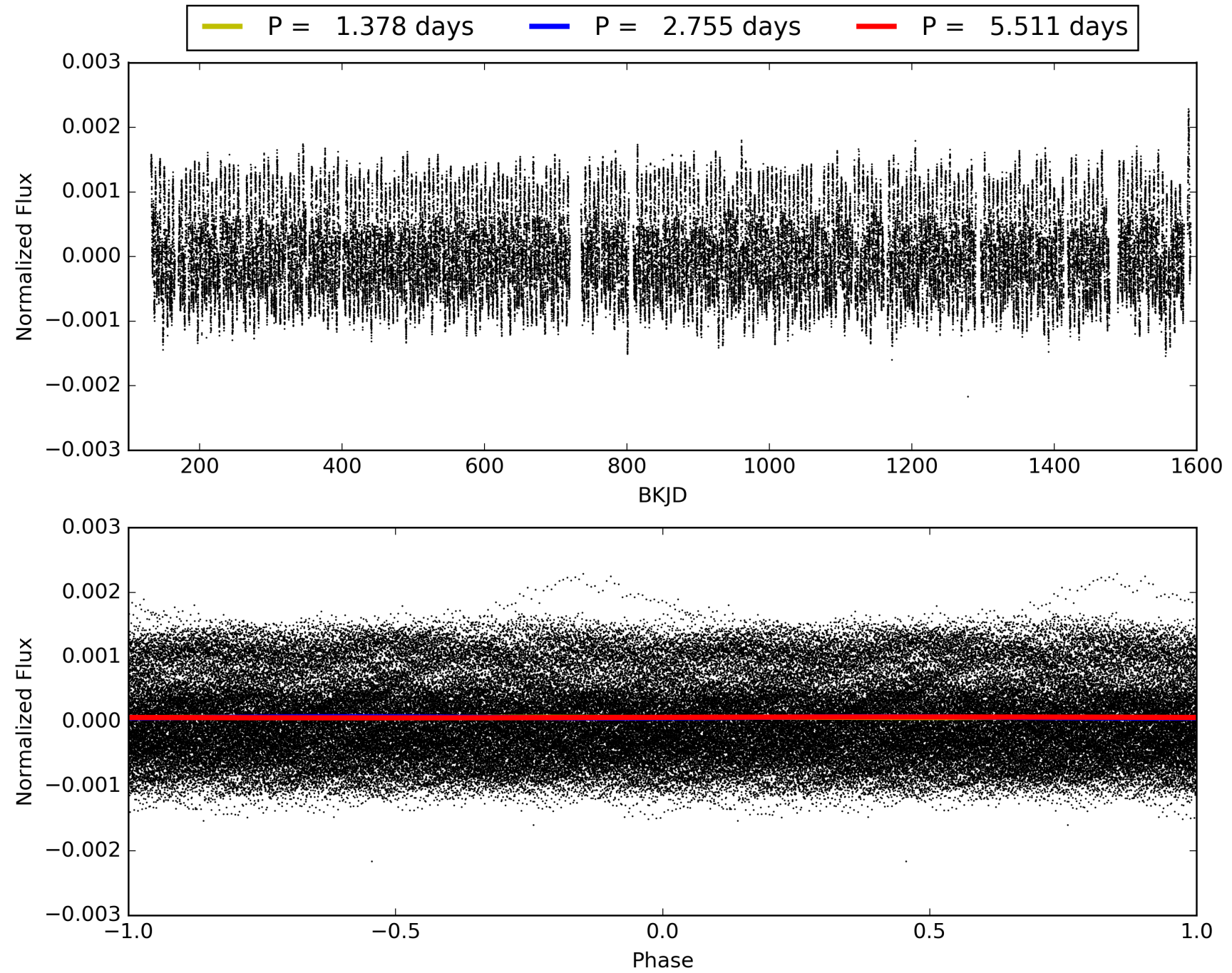
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009099927-01, PDC Light Curves

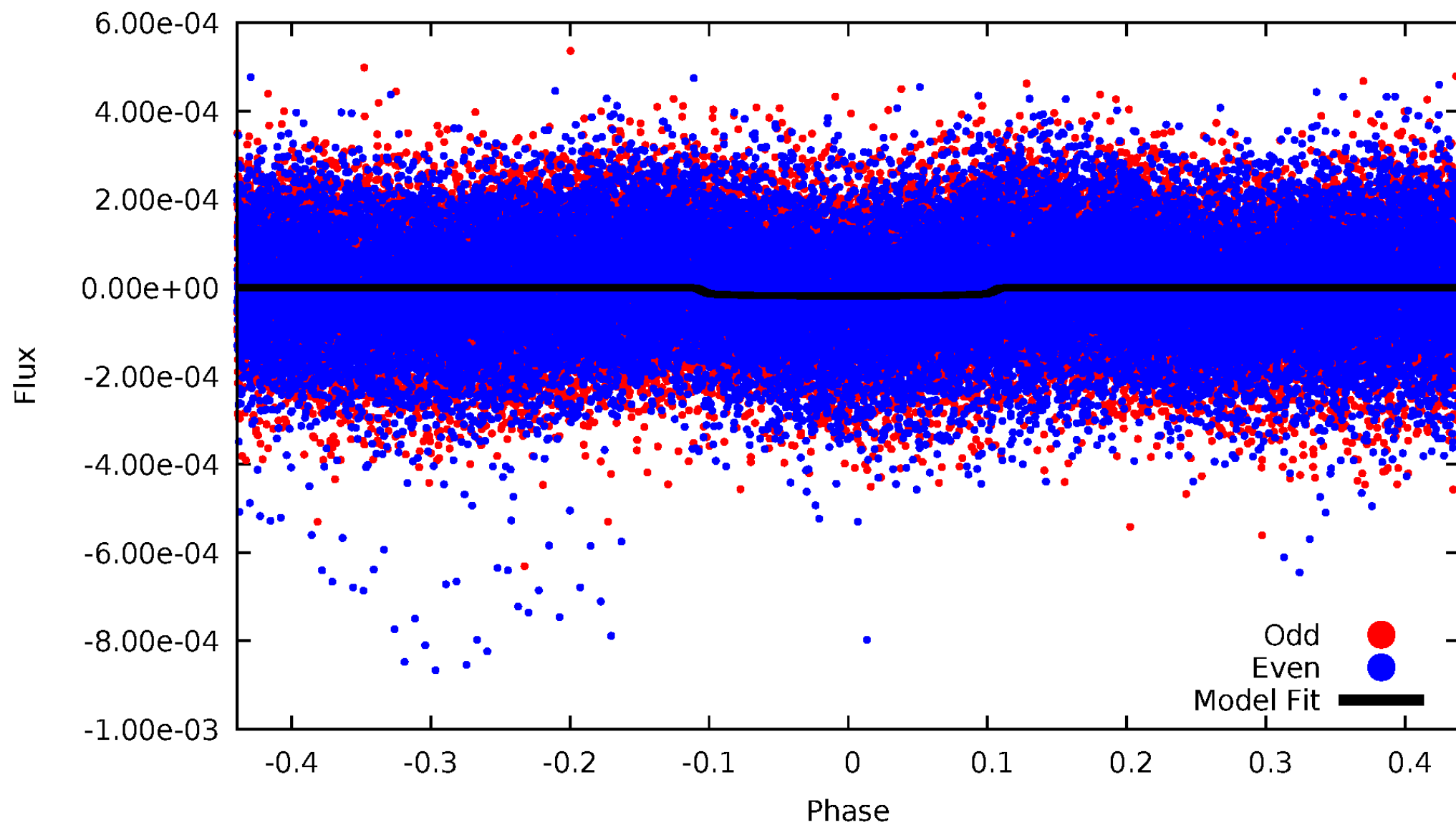


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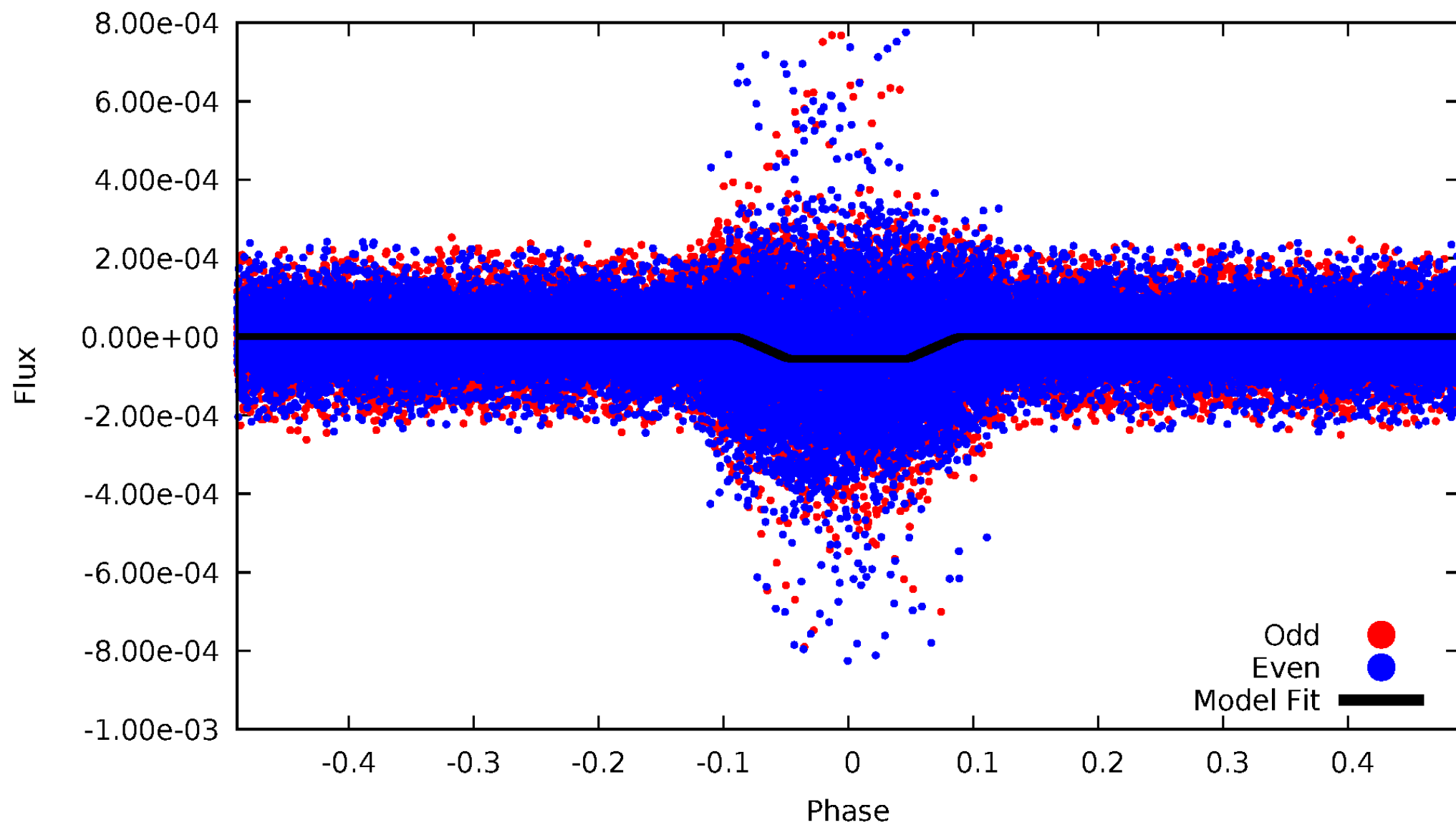
DV Odd/Even

TCE 009099927-01

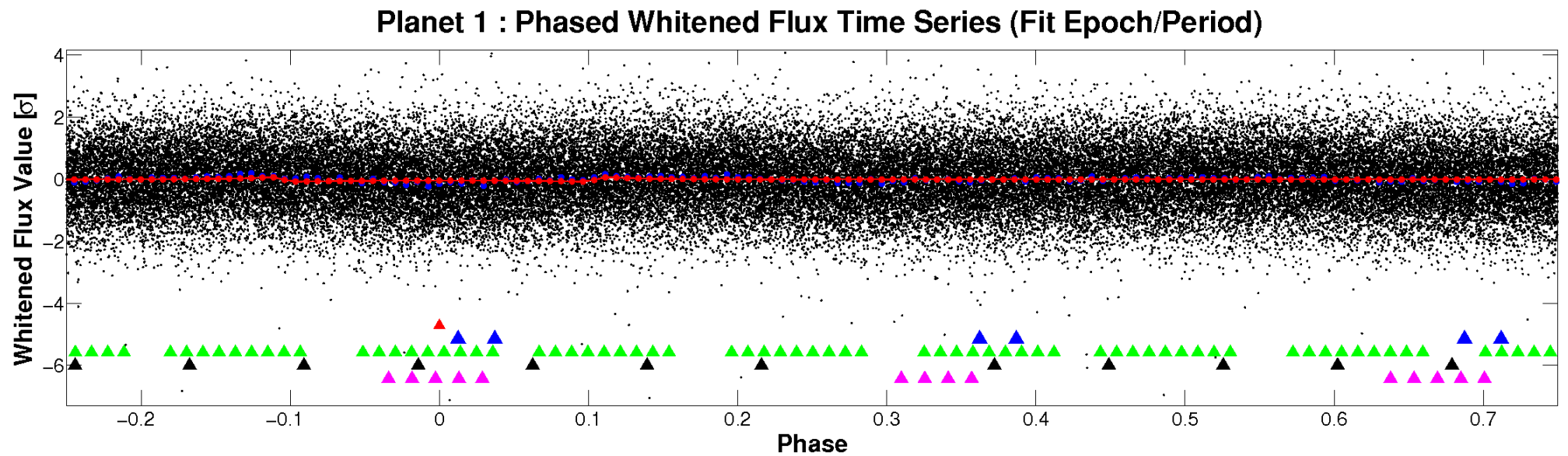
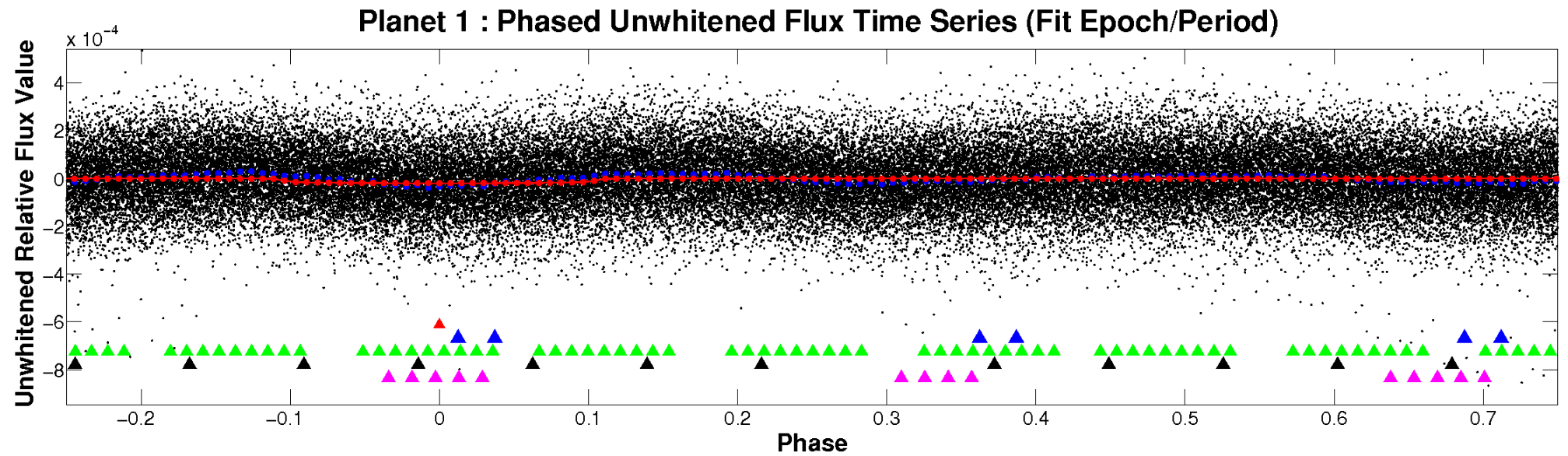


ALT Odd/Even

TCE 009099927-01

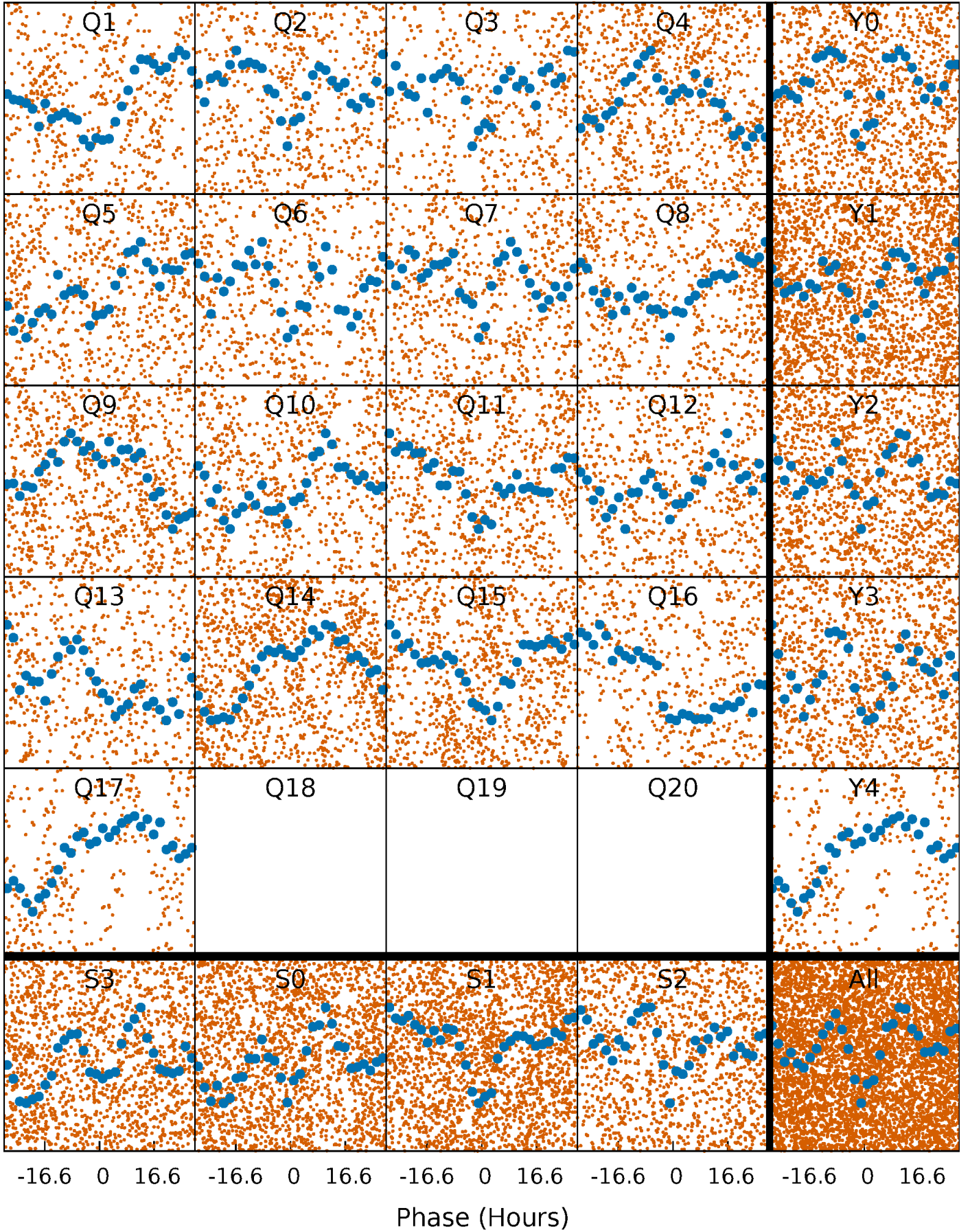


Non-Whitened Vs. Whitened Light Curve



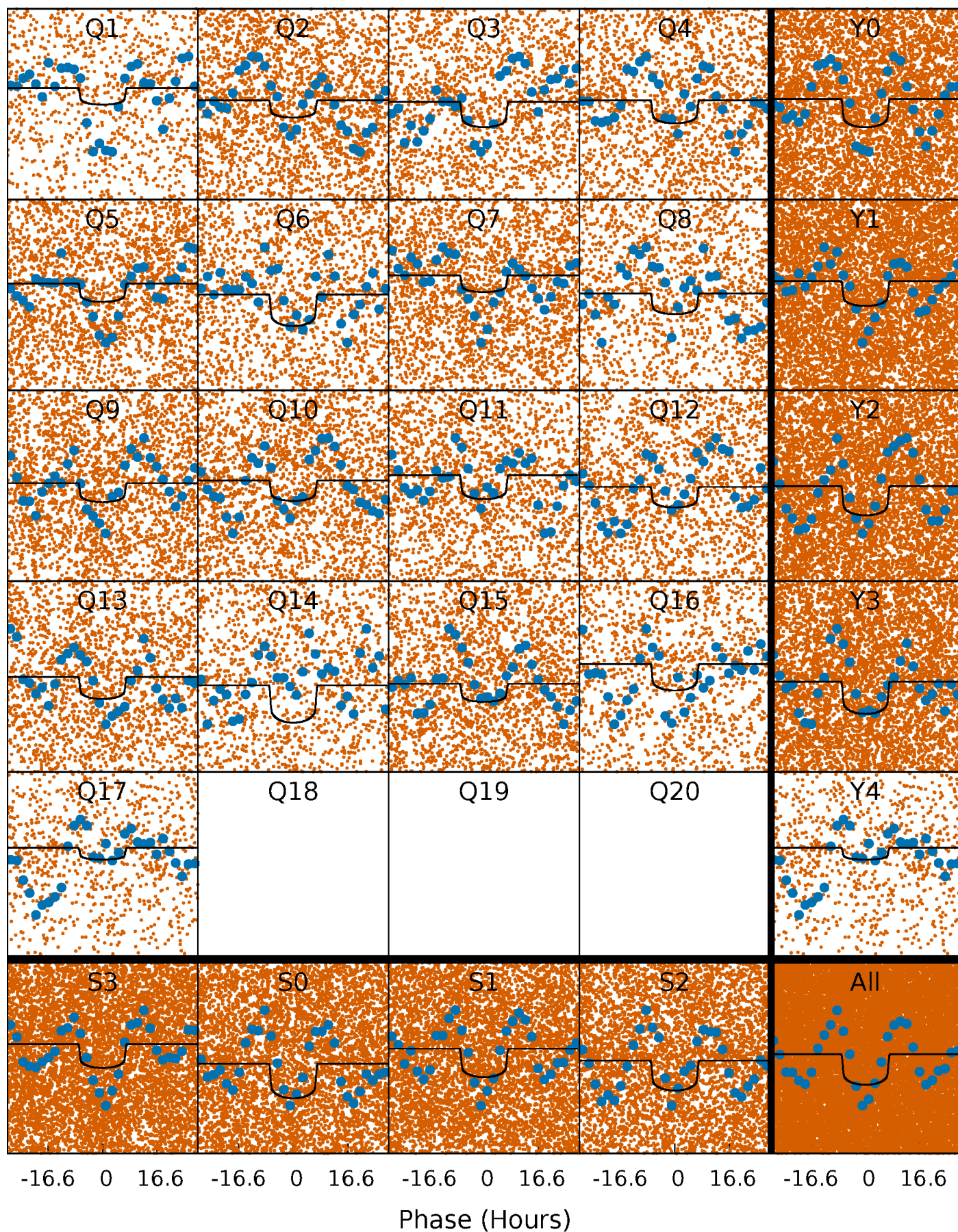
PDC Quarter-Phased Transit Curves

TCE 009099927-01 P= 2.755361 Days $T_0=133.864053$ (BKJD)



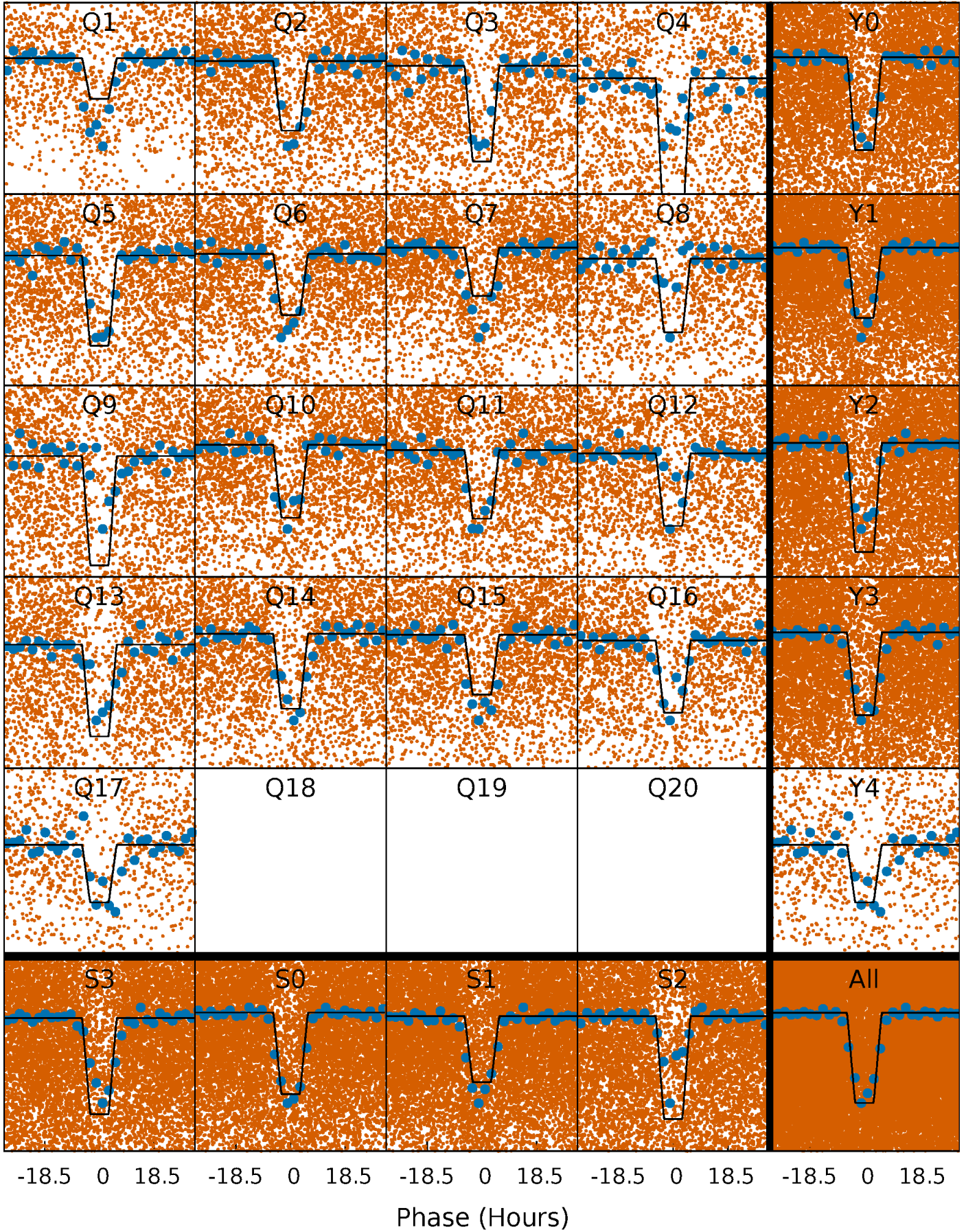
DV Quarter-Phased Transit Curves

TCE 009099927-01 P= 2.755361 Days $T_0=133.864053$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

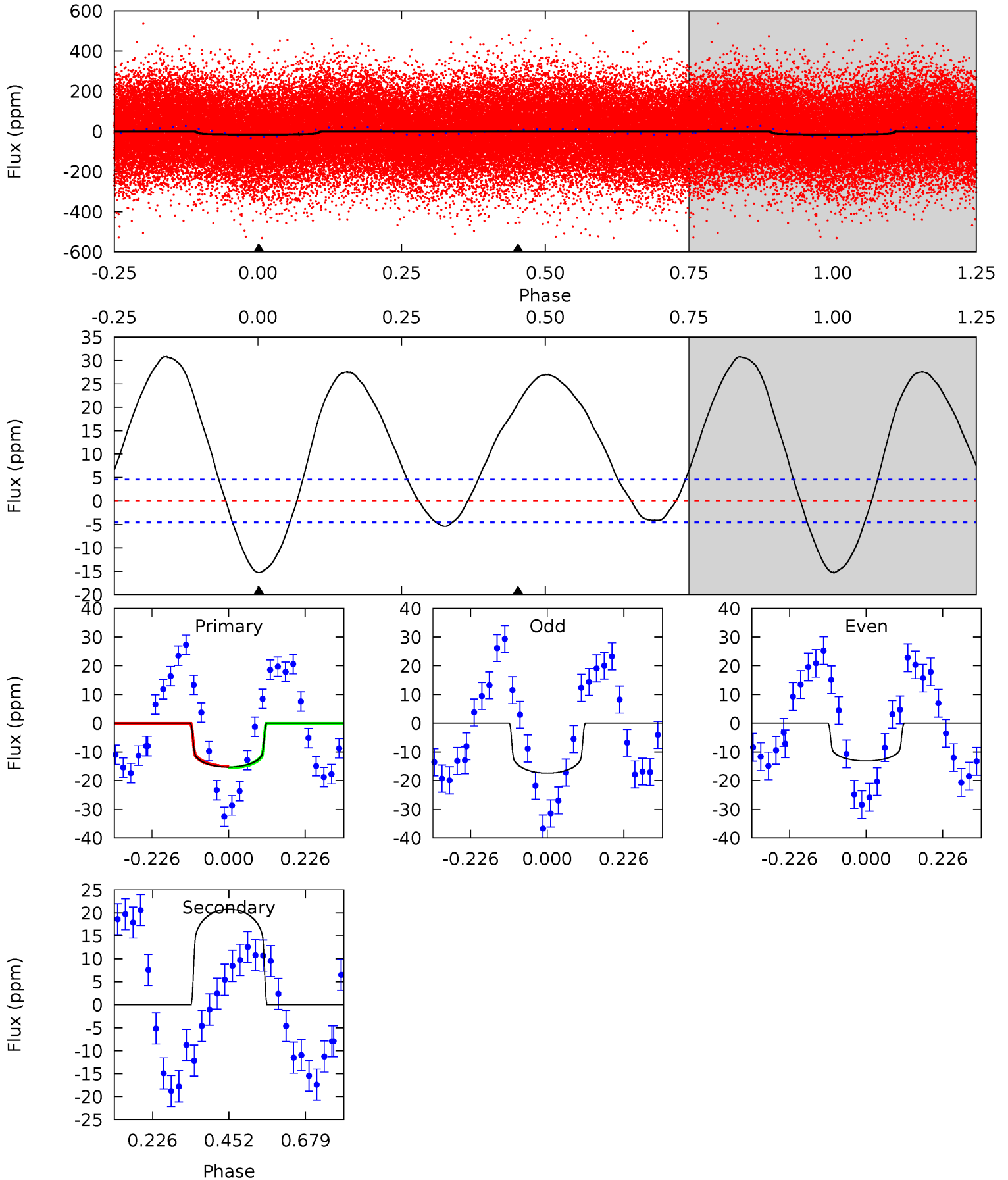
TCE 009099927-01 P= 2.755253 Days $T_0=133.885437$ (BKJD)



DV Model-Shift Uniqueness Test

009099927-01, P = 2.755361 Days, E = 131.108692 Days

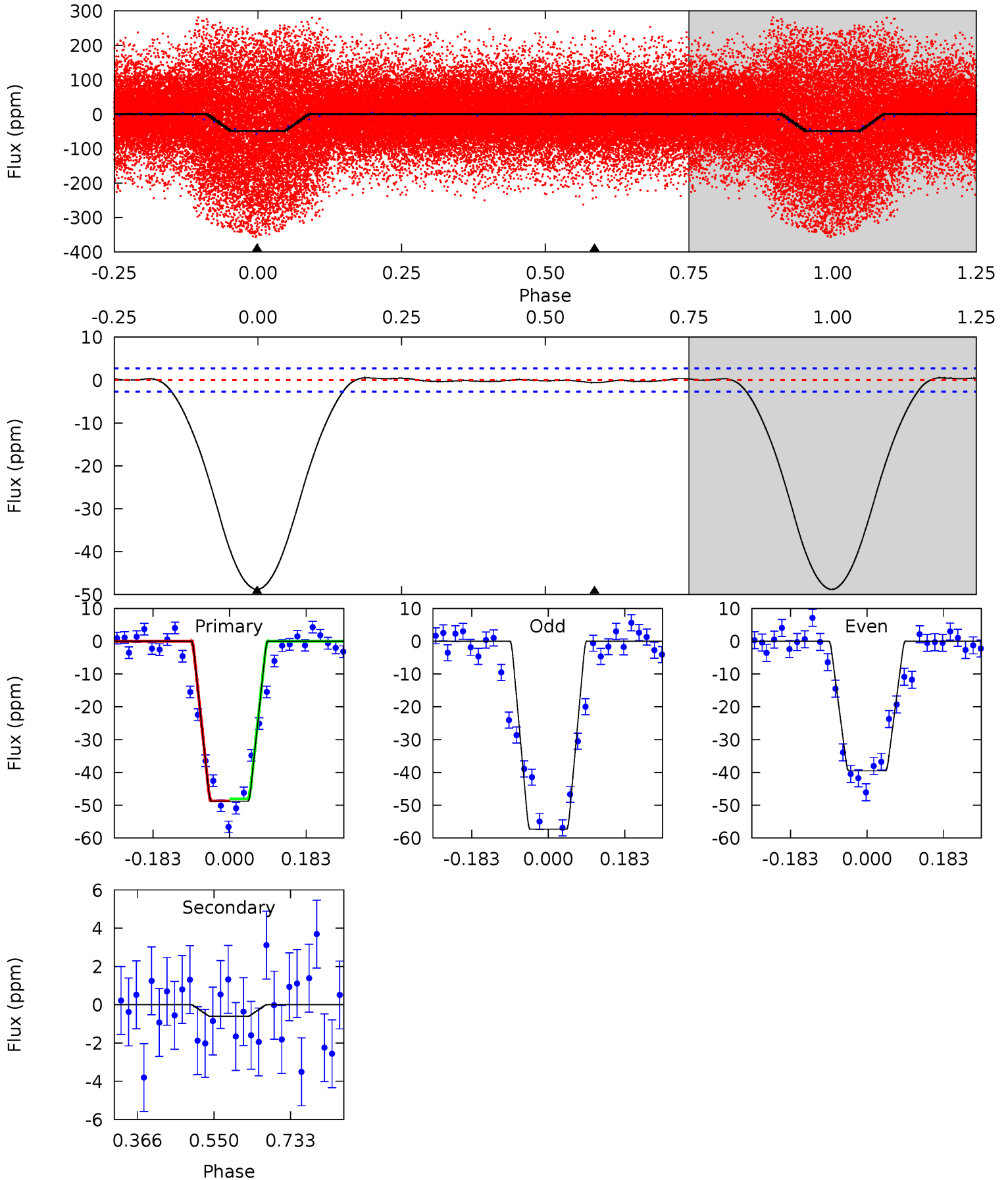
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.7	-20.0	0	0	4.39	1.21	6.16	14.7	14.7	-20.0	-20.0	2.06	0.97	0.67	0.22



Alt Model-Shift Uniqueness Test

009099927-01, P = 2.755253 Days, E = 131.130184 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
79.6	0.99	0	0	4.44	1.33	0.47	79.6	79.6	0.99	0.99	14.5	1.18	0.01	0.51



Stellar Parameters For KIC 009099927

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6837^{+183}_{-204}	$3.756^{+0.320}_{-0.080}$	$-0.500^{+0.300}_{-0.250}$	$2.575^{+0.417}_{-0.974}$	$1.380^{+0.230}_{-0.276}$	$0.114^{+0.258}_{-0.038}$
	+3%/-3%	+9%/-2%	+60%/-50%	+16%/-38%	+17%/-20%	+226%/-33%
Source	PHO1	FLK73	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009099927-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	21 ± 1	$1.29^{+0.24}_{-0.25}$	3198^{+181}_{-295}	-6706^{+395}_{-445}	$-12.878^{+3.332}_{-6.462}$
Alt.	-1 ± 1	$2.07^{+0.27}_{-0.44}$	3201^{+187}_{-279}	-2885^{+5405}_{-342}	$0.152^{+0.203}_{-0.151}$

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming A=0.3)

A_{obs} = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

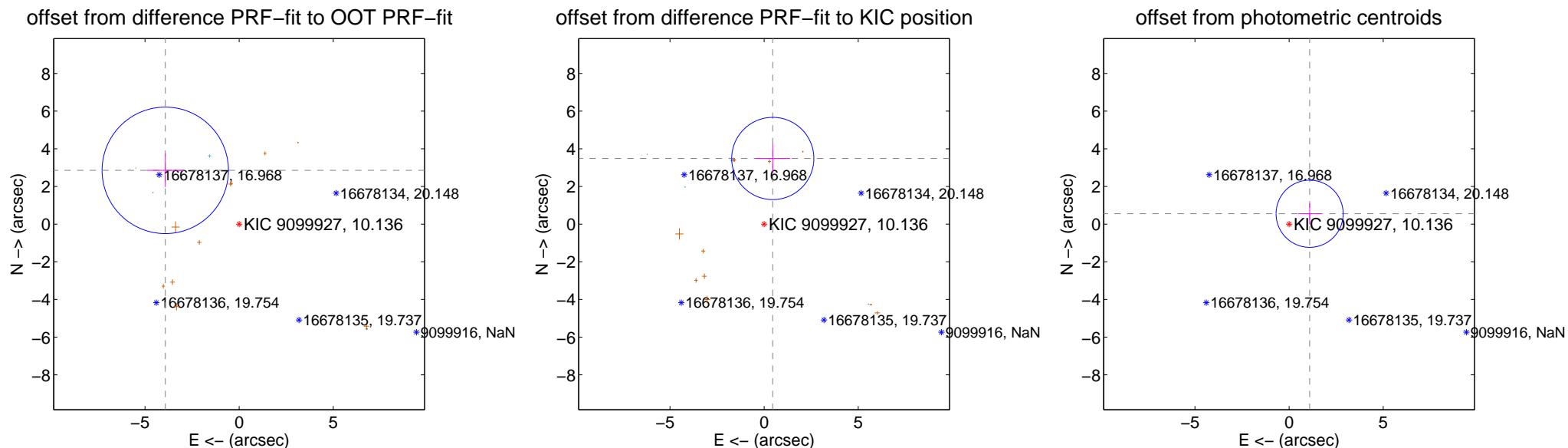
DV Centroid Data

Supplemental centroid analysis for 009099927-01. **Kepler magnitude: 10.14.** Transit SNR 7.25

There are 3 quarters with good PRF difference image offsets

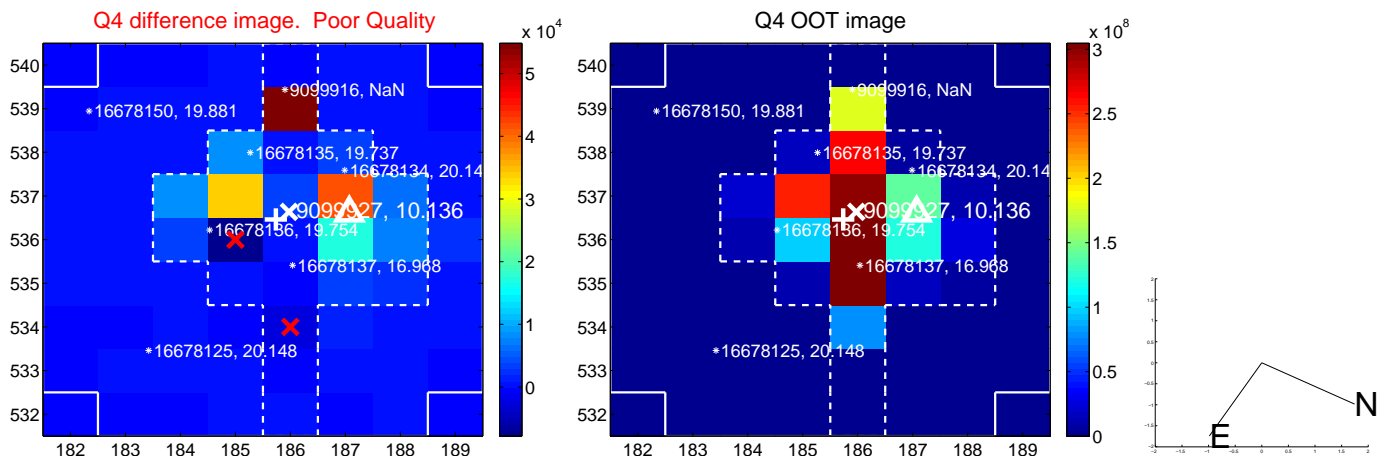
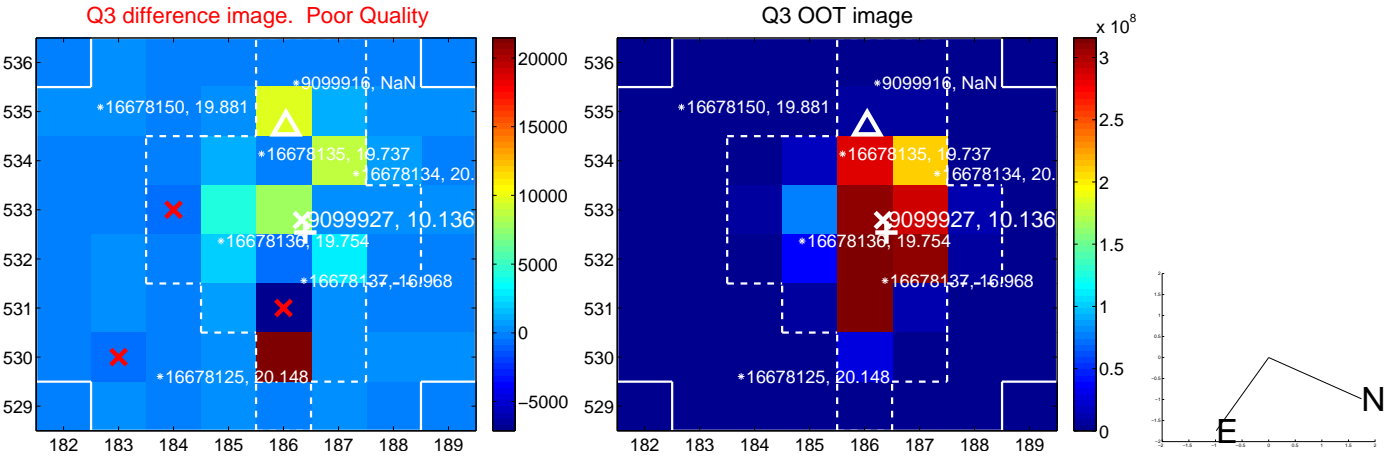
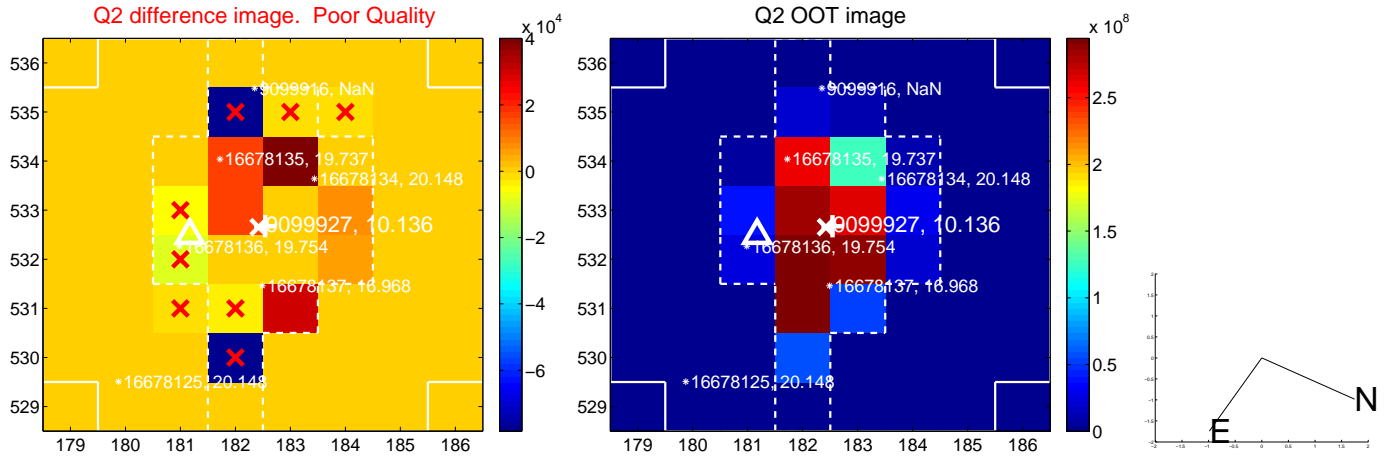
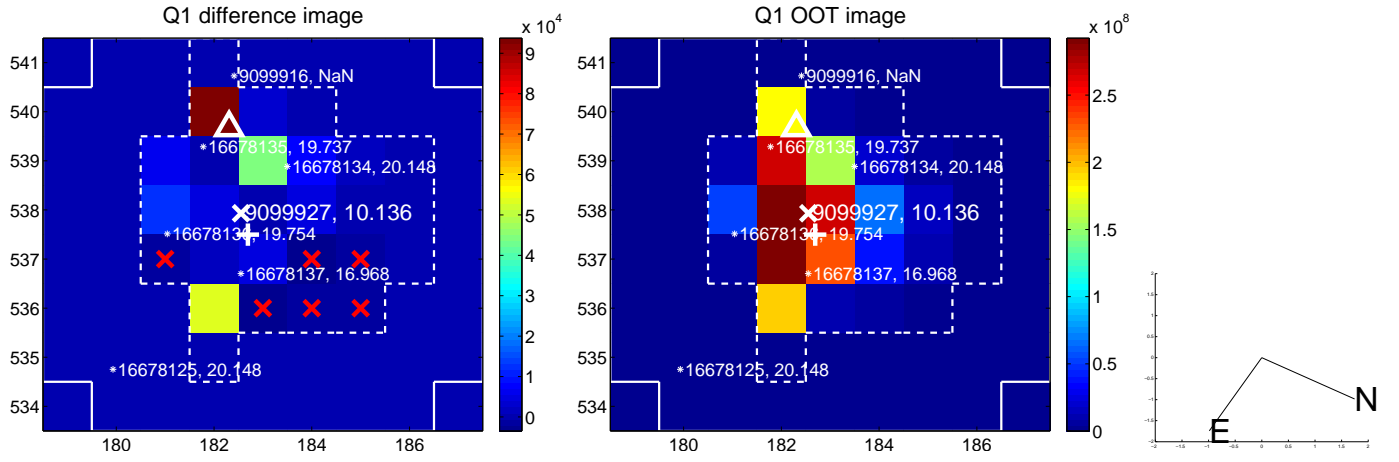
The direct PRF centroid is offset from the target star catalog position by about 1.68 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.853 ± 1.119	4.34	3.925 ± 0.983	2.854 ± 0.887
PRF-fit source offset from KIC position	3.515 ± 0.727	4.83	-0.461 ± 0.924	3.485 ± 0.776
photometric centroid source offset	1.22 ± 0.59	2.06	-1.09 ± 0.60	0.55 ± 0.56

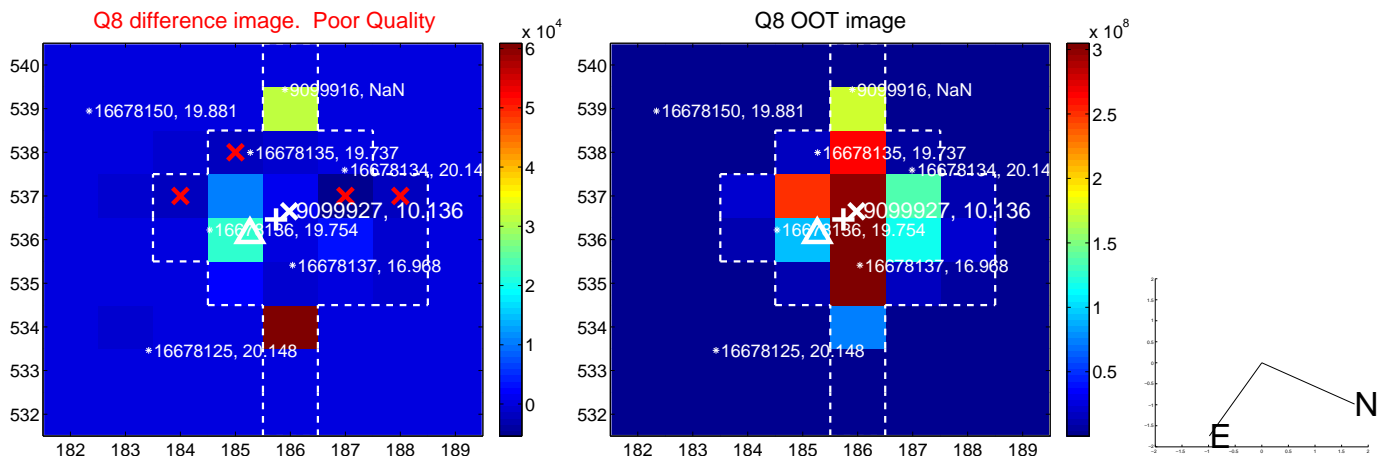
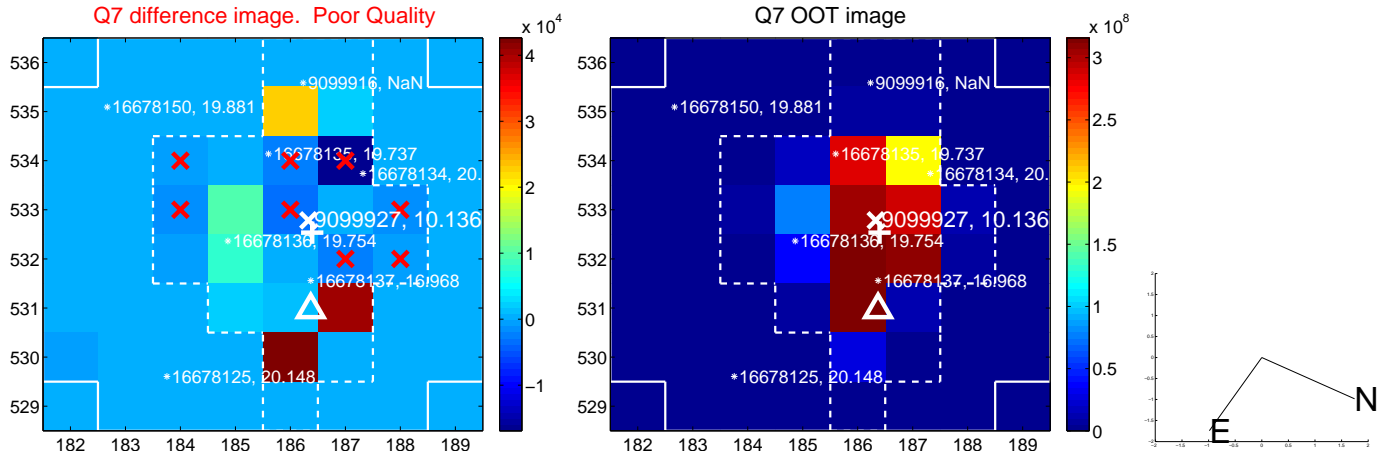
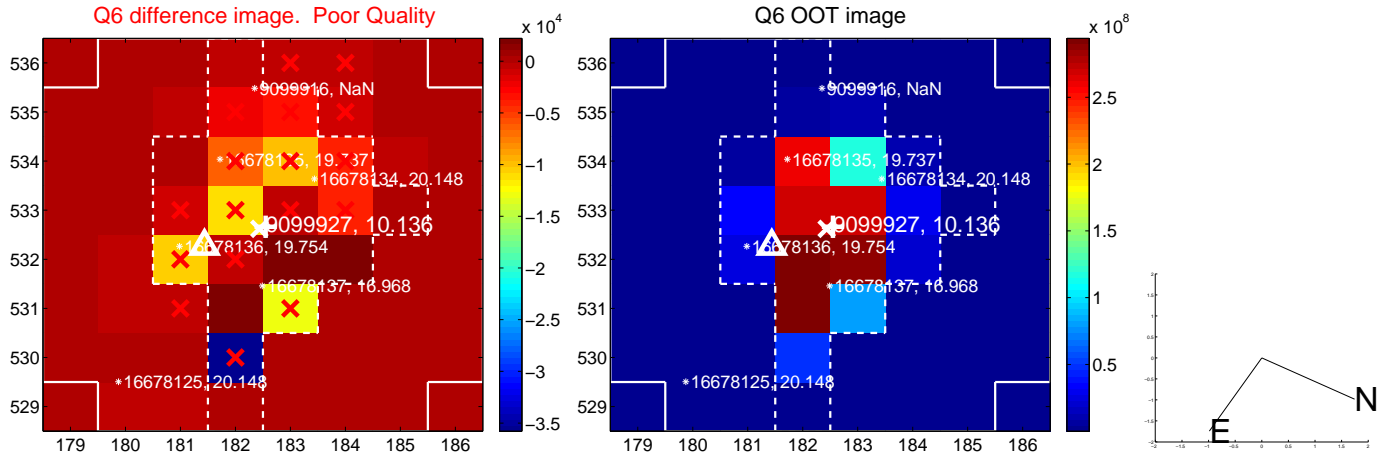
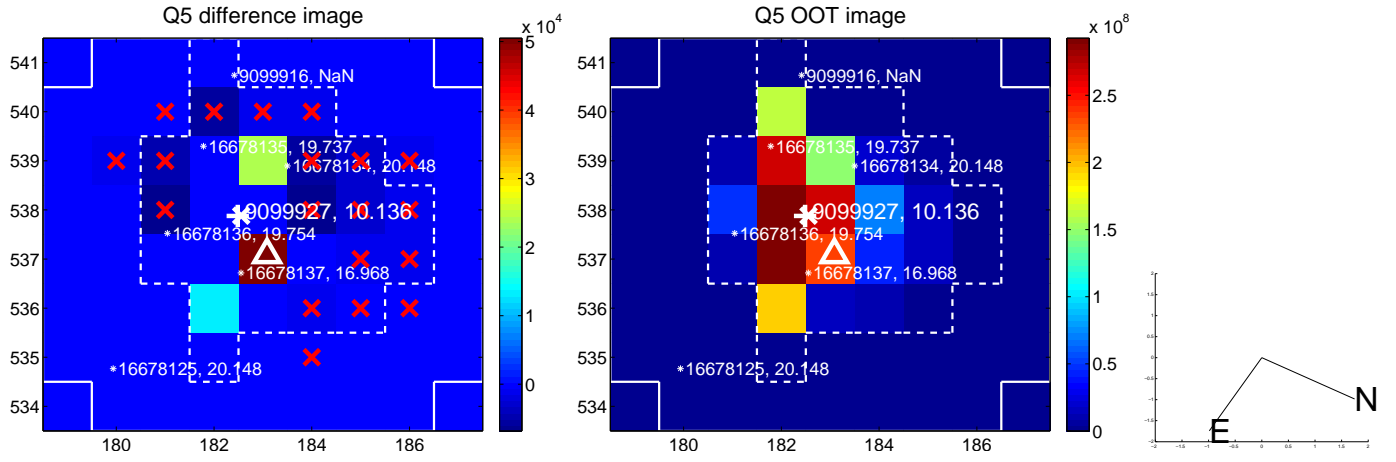


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

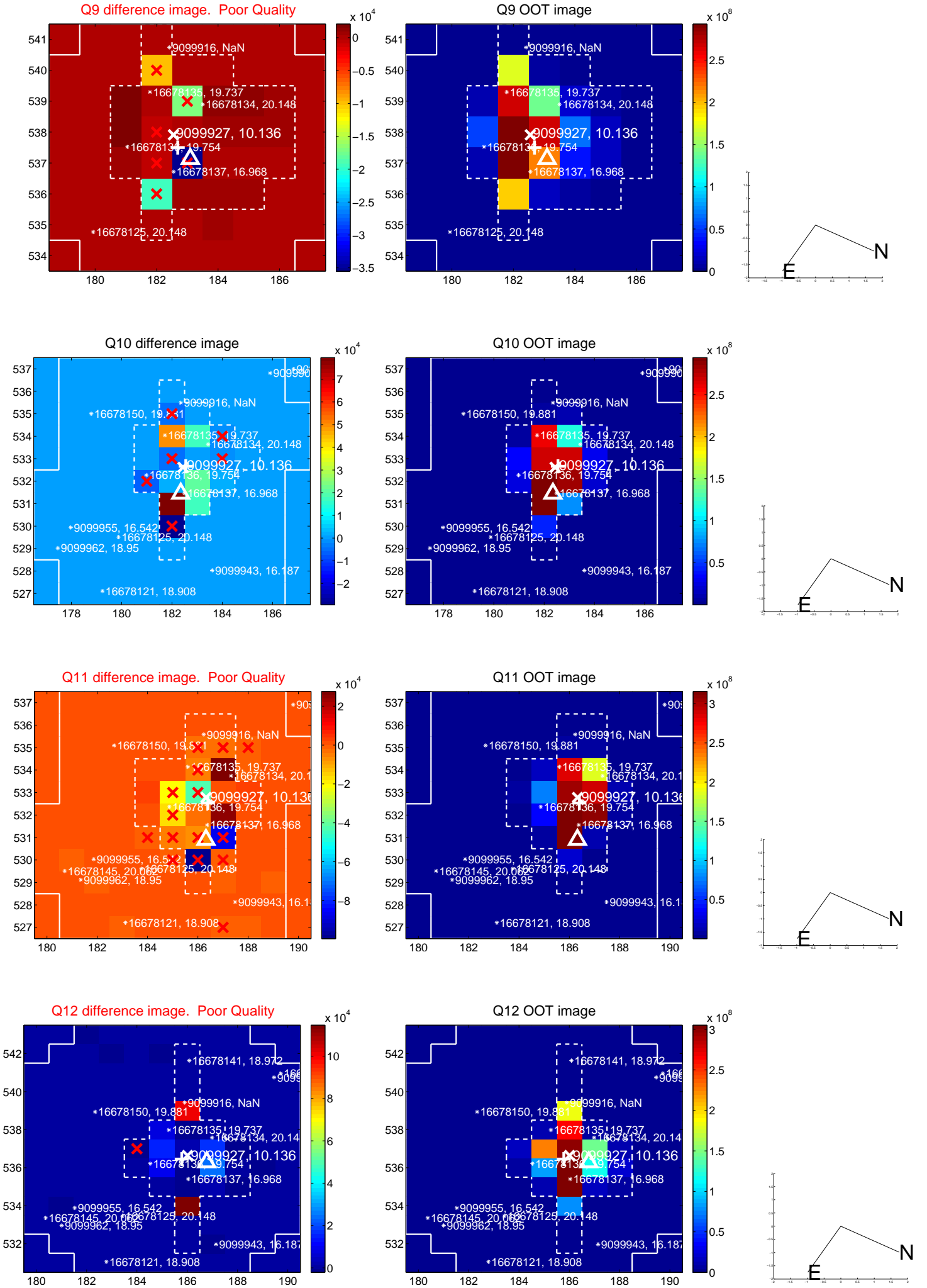
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



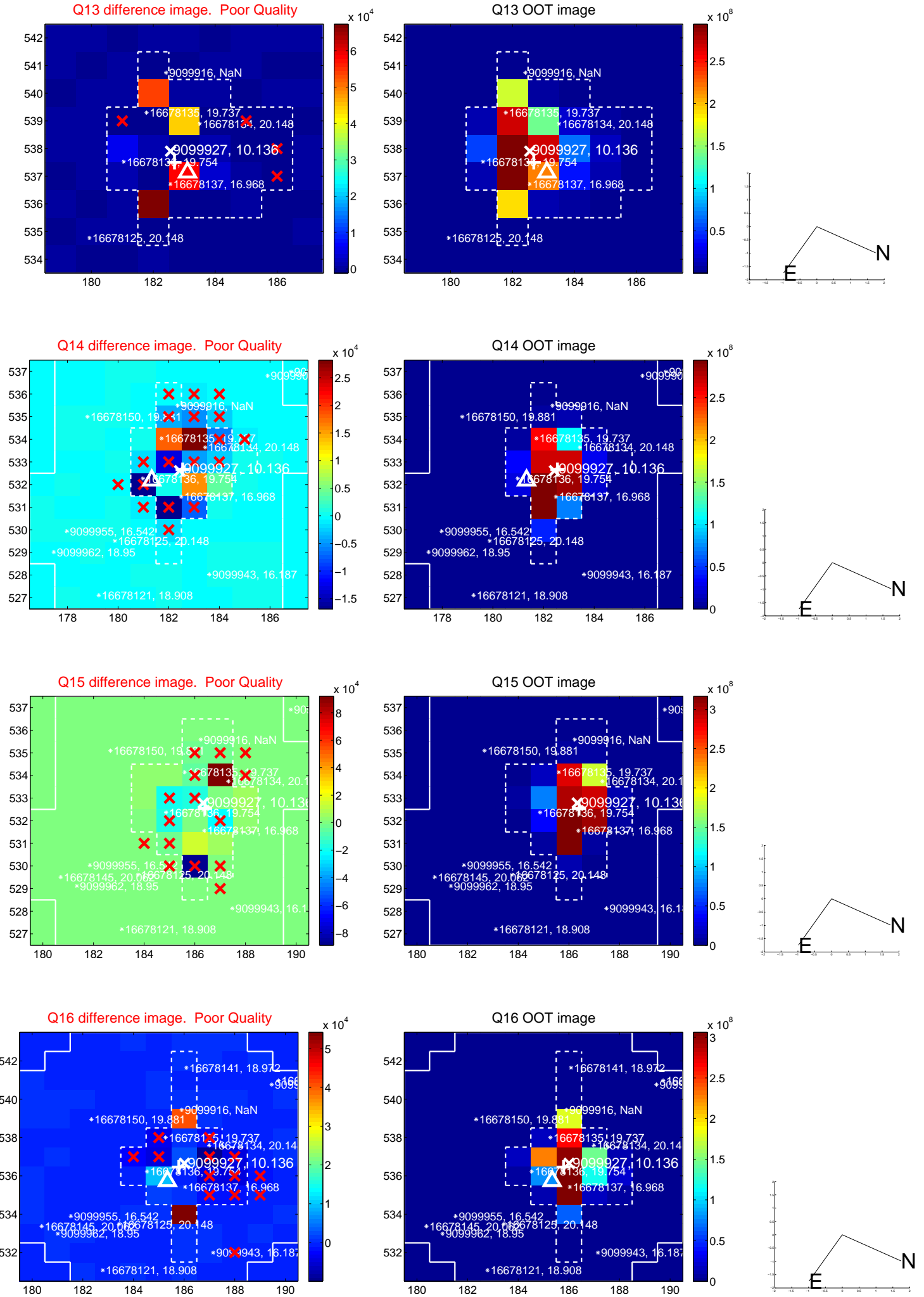
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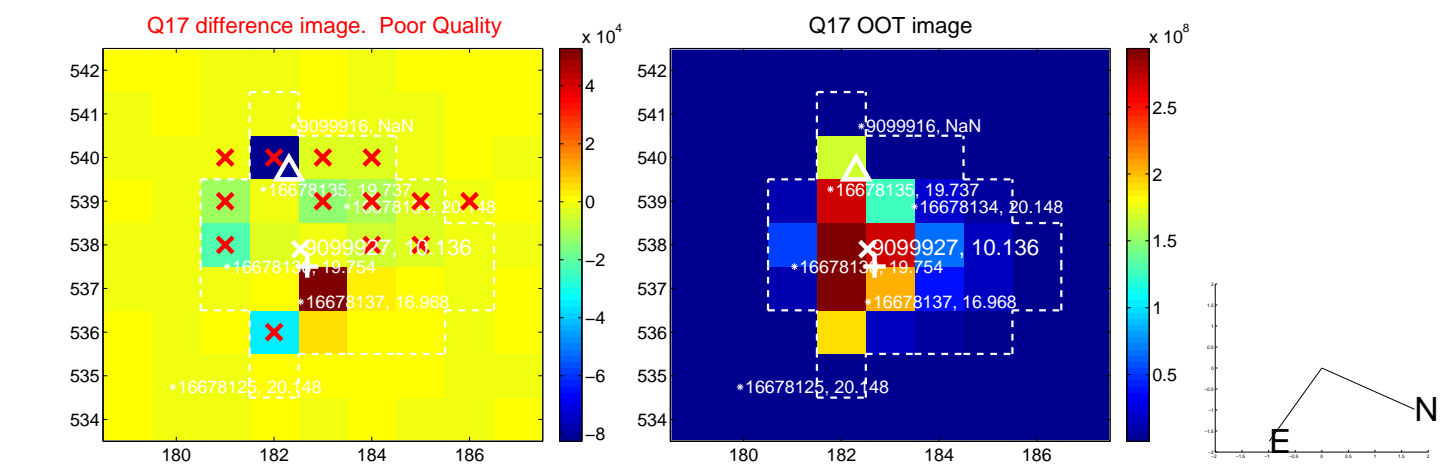
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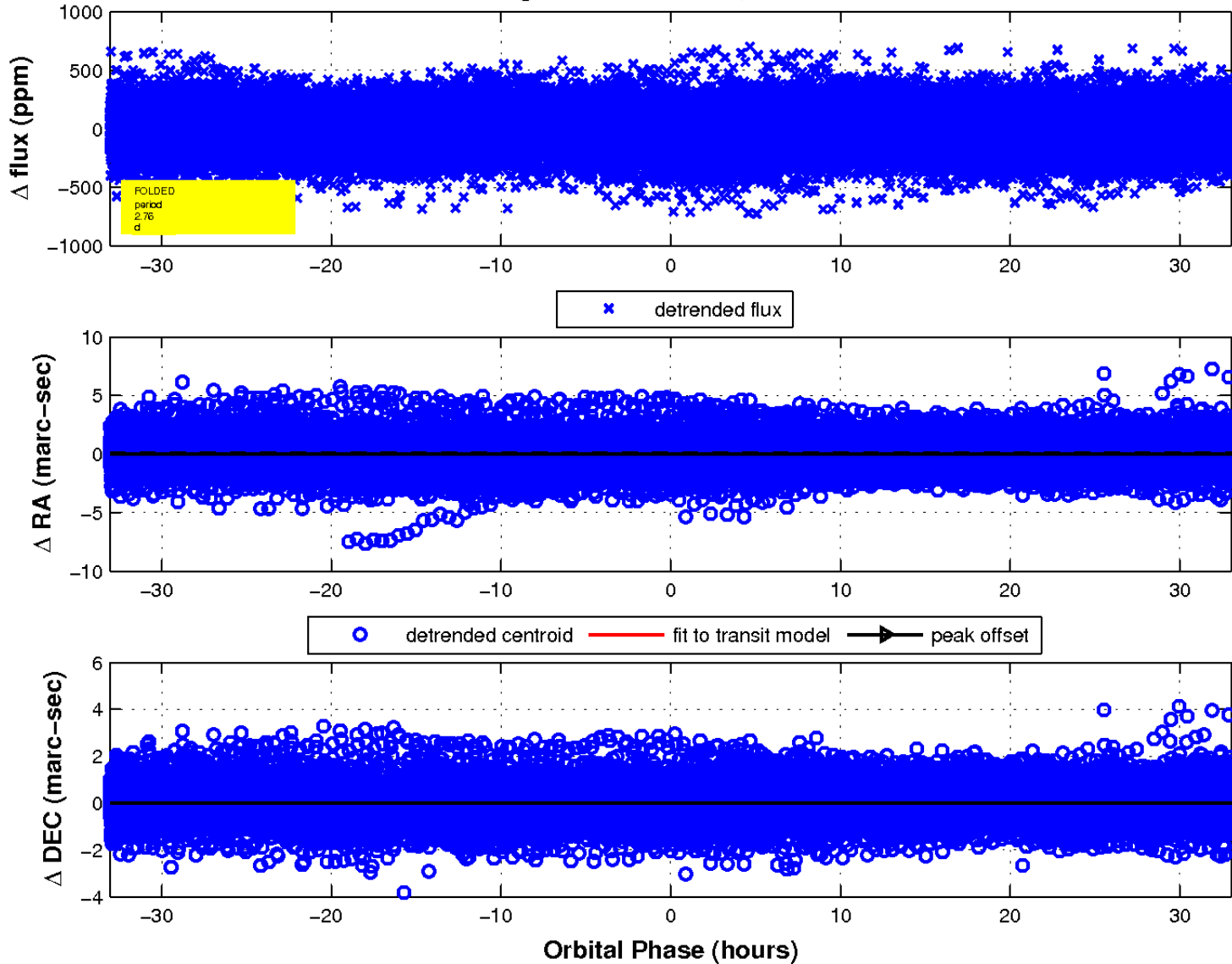
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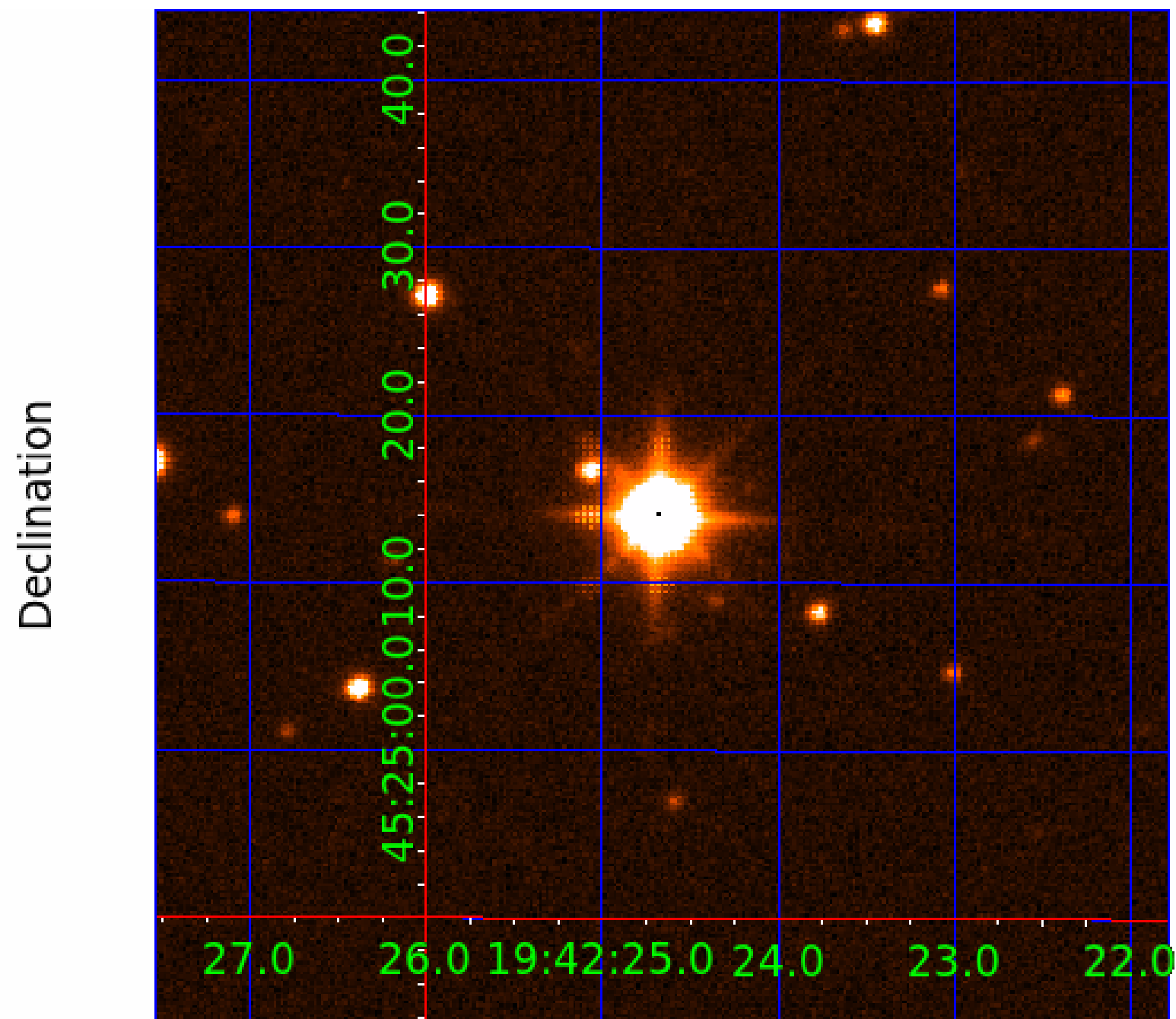
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fluxWeightedCentroids, Planet 1 of 5



UKIRT Image



KIC 009099927

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009099927-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
009099927-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
009099927-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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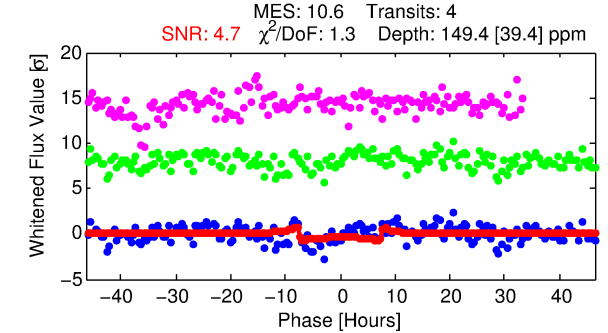
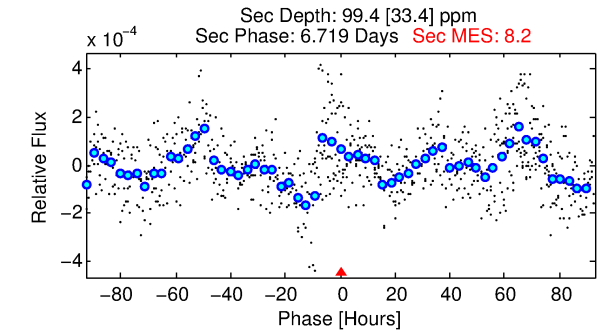
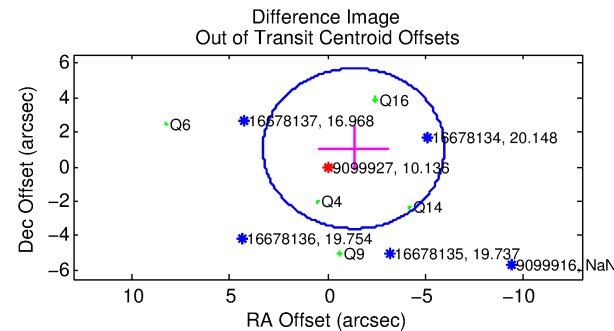
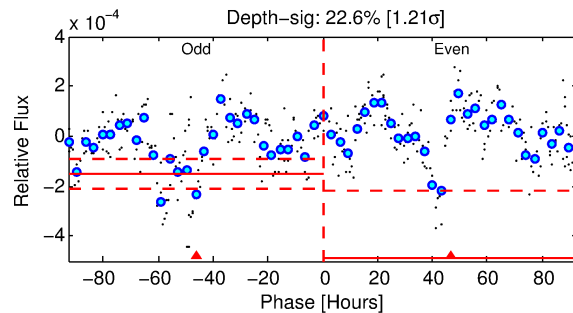
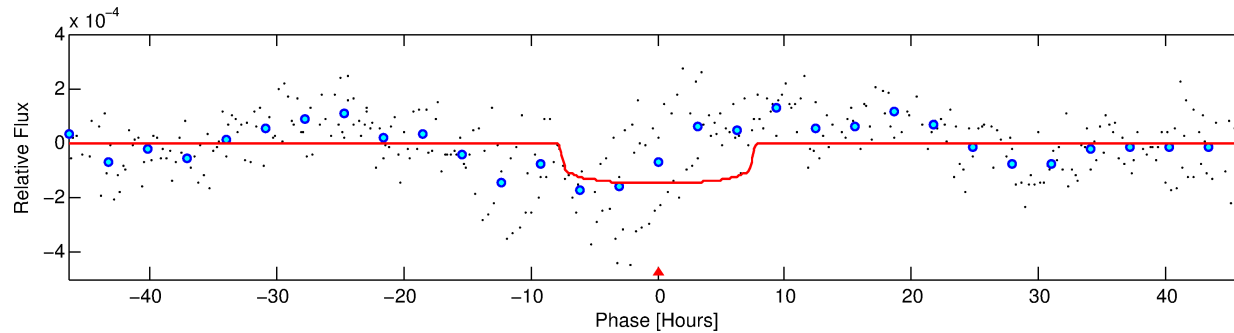
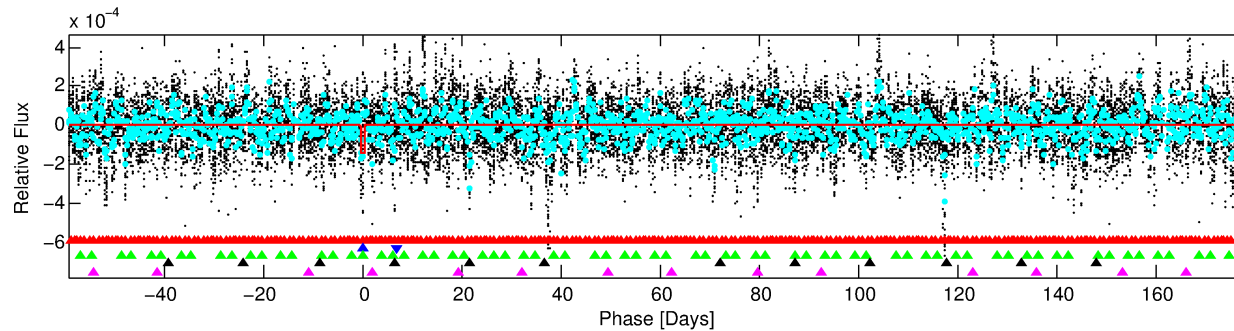
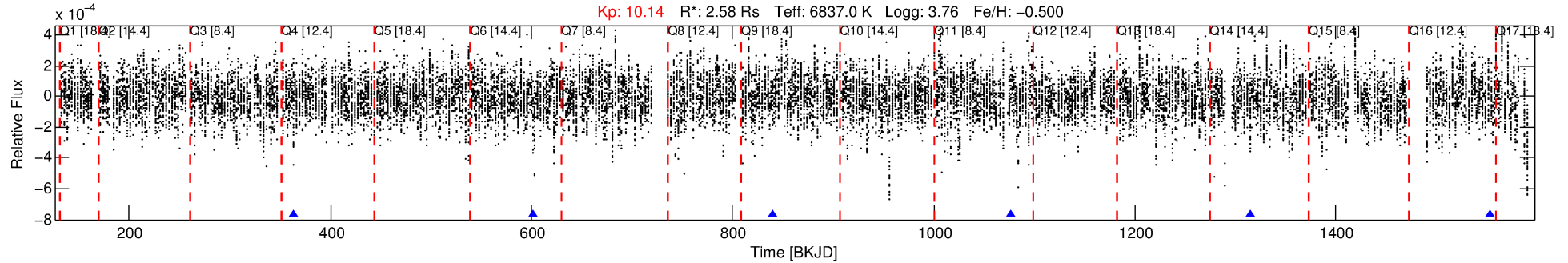
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009099927-02

No Significant Match Found

DV One-Page Summary

KIC: 9099927 Candidate: 2 of 5 Period: 237.857 d



DV Fit Results:

Period = 237.85694 [0.00668] d
Epoch = 363.6250 [0.0178] BKJD
Rp/R* = 0.0121 [0.0044]
a/R* = 81.52 [152.12]
b = 0.74 [1.16]
Seff = 18.55 [10.48]
Teq = 529 [75] K
Rp = 3.40 [1.79] Re
a = 0.8364 [0.2944] AU
Ag = 3304.83 [3222.90] [1.03 σ]
Teffp = 6204 [1260] K [4.49 σ]

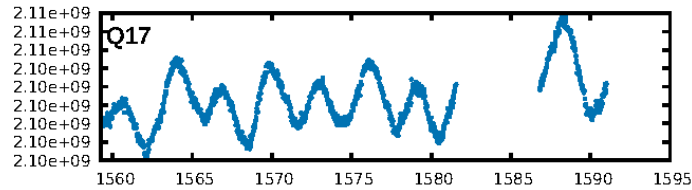
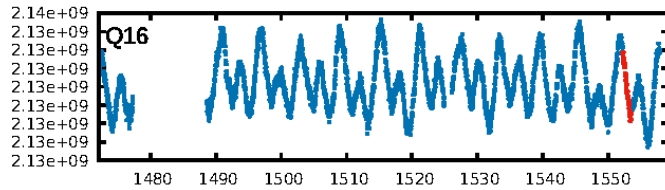
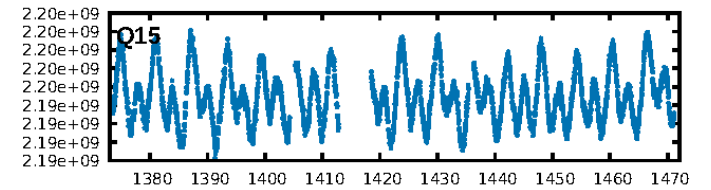
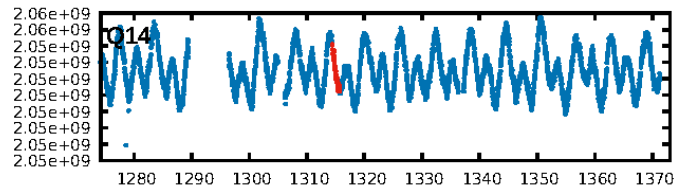
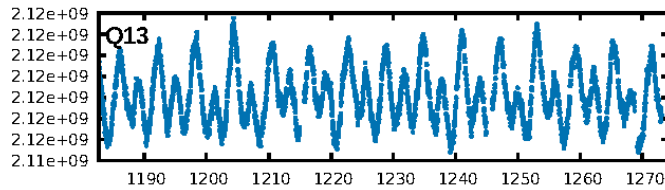
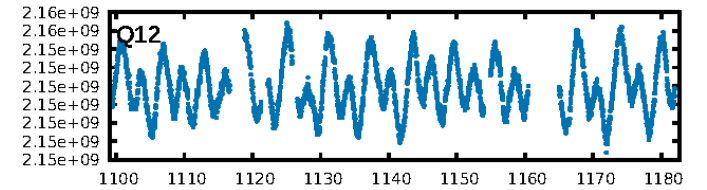
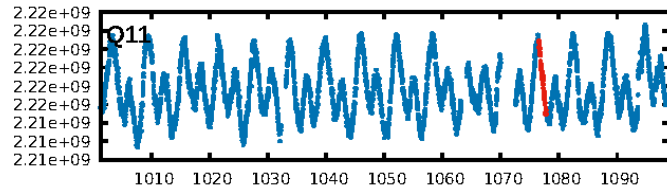
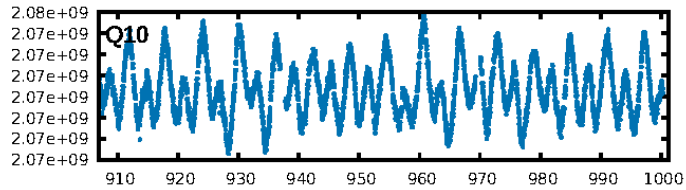
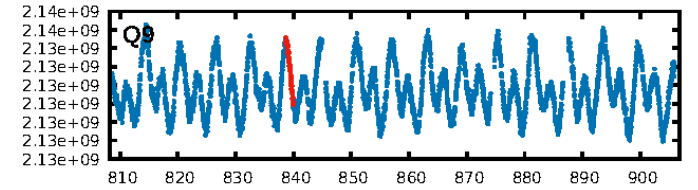
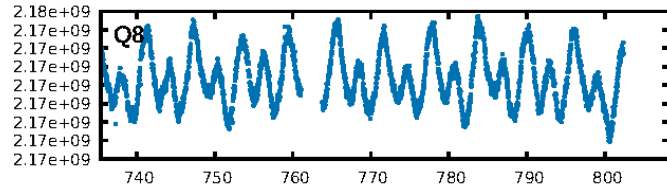
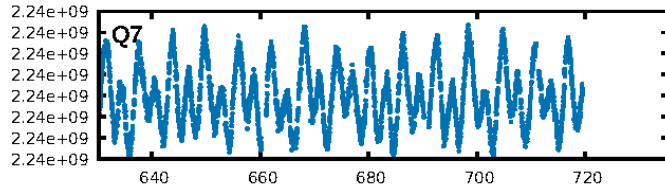
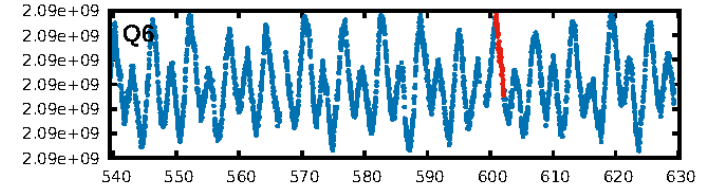
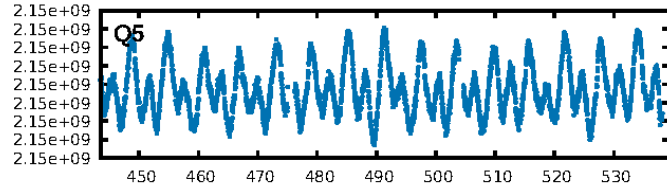
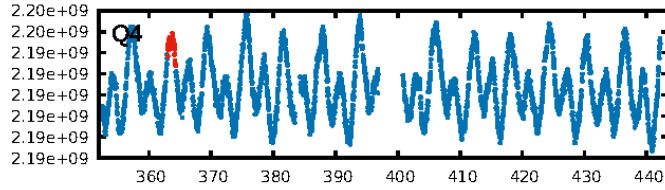
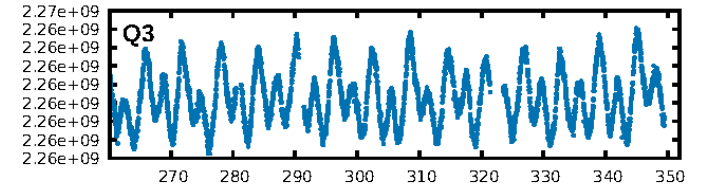
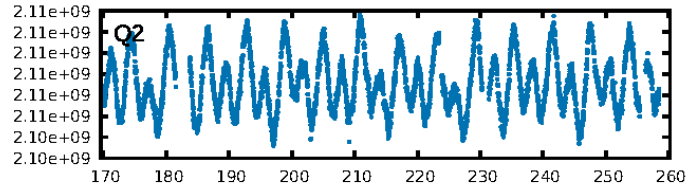
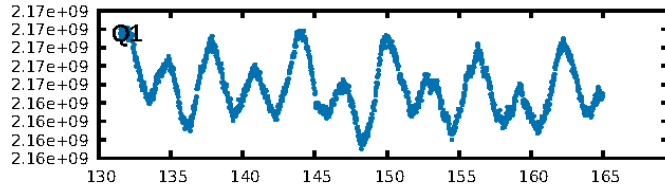
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [77.72 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.21e-11
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: N/A
Centroid-sig: 4.8%
Centroid-so: 0.889 arcsec [1.28 σ]
OotOffset-rm: 1.702 arcsec [1.10 σ]
OotOffset-st: 2/0/2/1 [5]
KicOffset-rm: 1.451 arcsec [1.08 σ]
KicOffset-st: 2/0/2/1 [5]
DiffImageQuality-fgm: 0.00 [0/5]
DiffImageOverlap-fno: 0.00 [0/6]

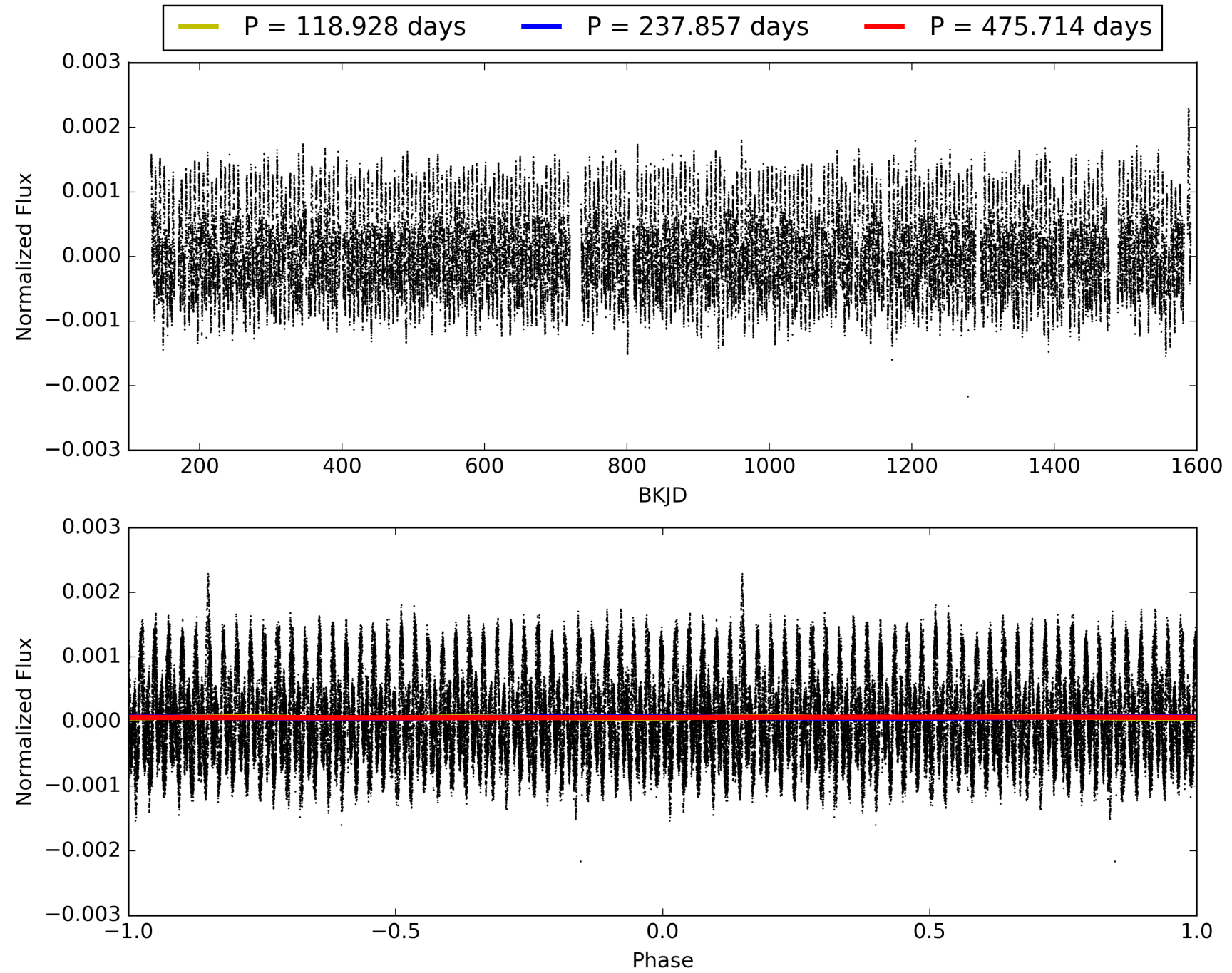
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:51:52 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009099927-02, PDC Light Curves

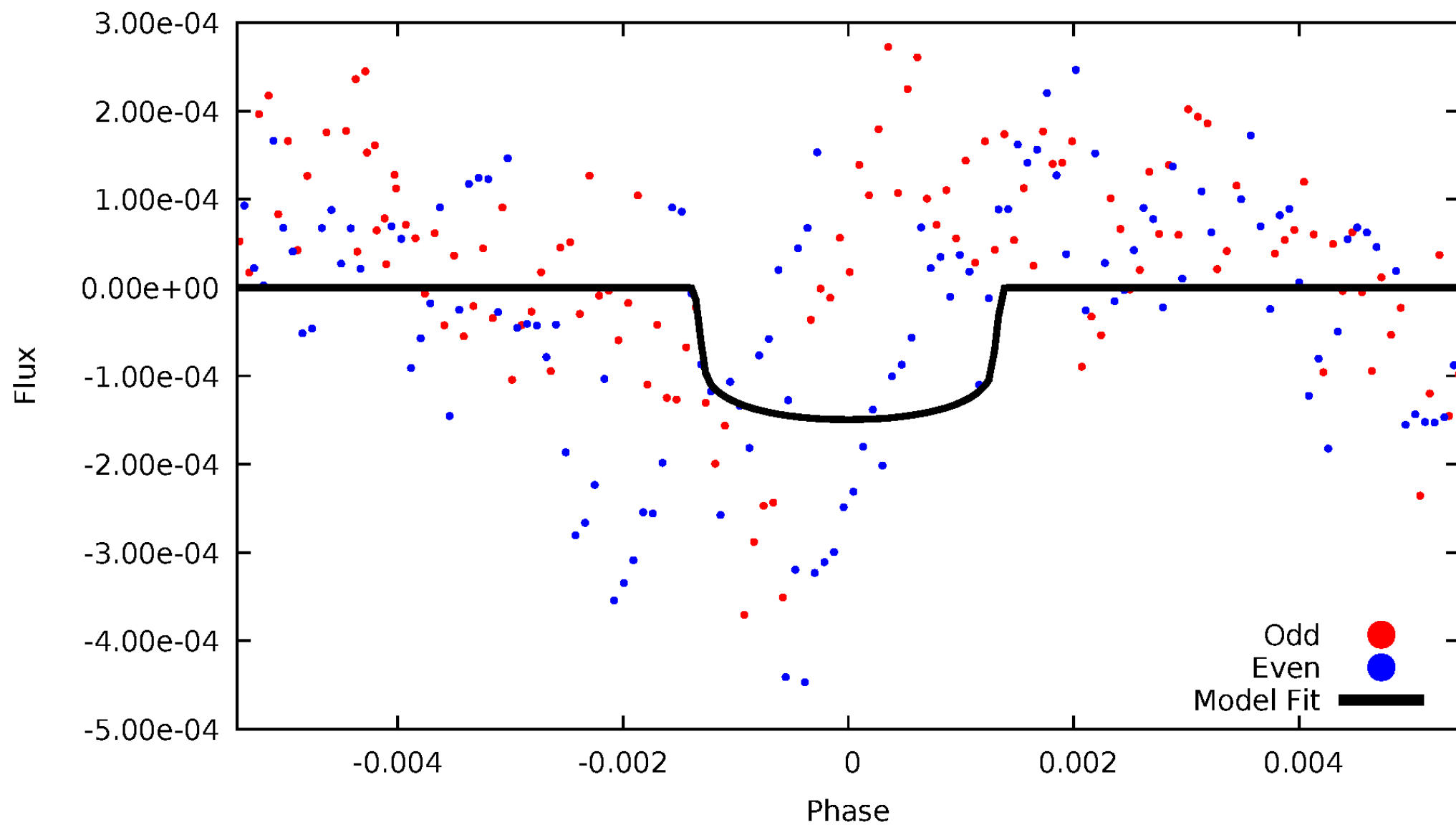


TCE 009099927-02



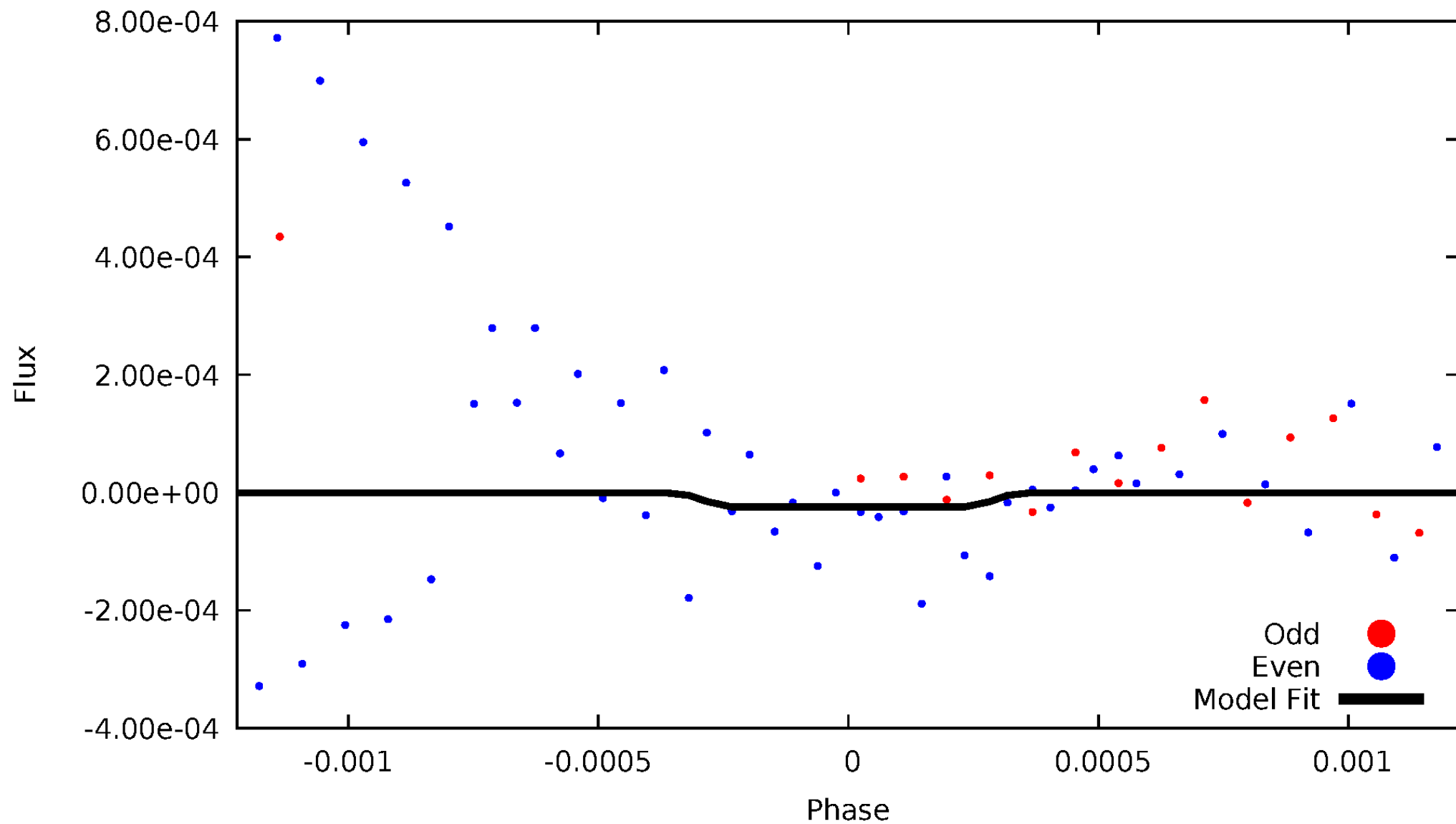
DV Odd/Even

TCE 009099927-02



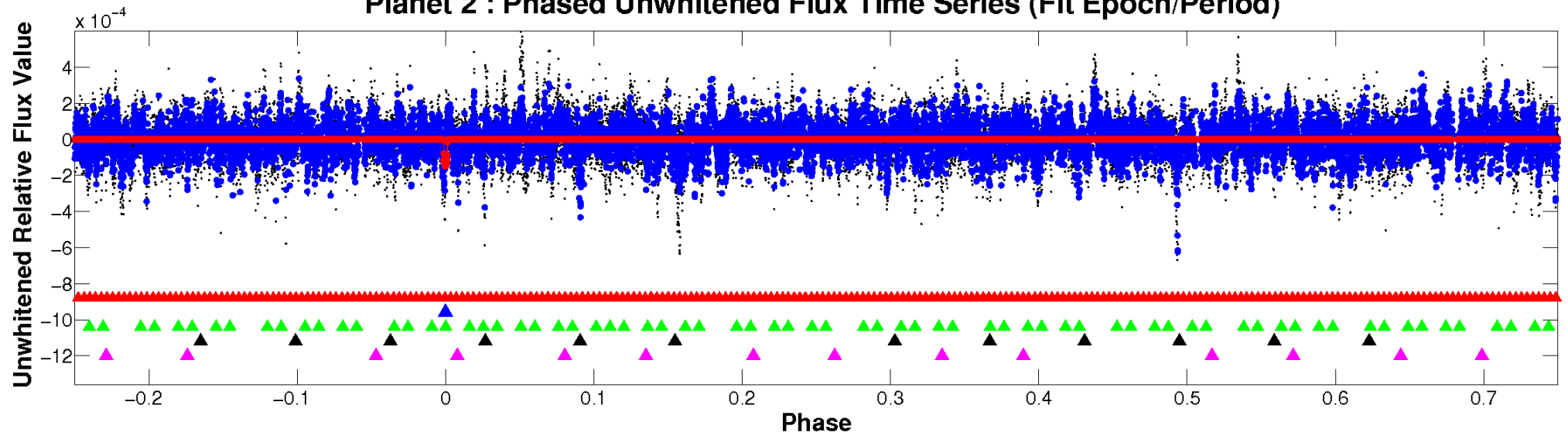
ALT Odd/Even

TCE 009099927-02

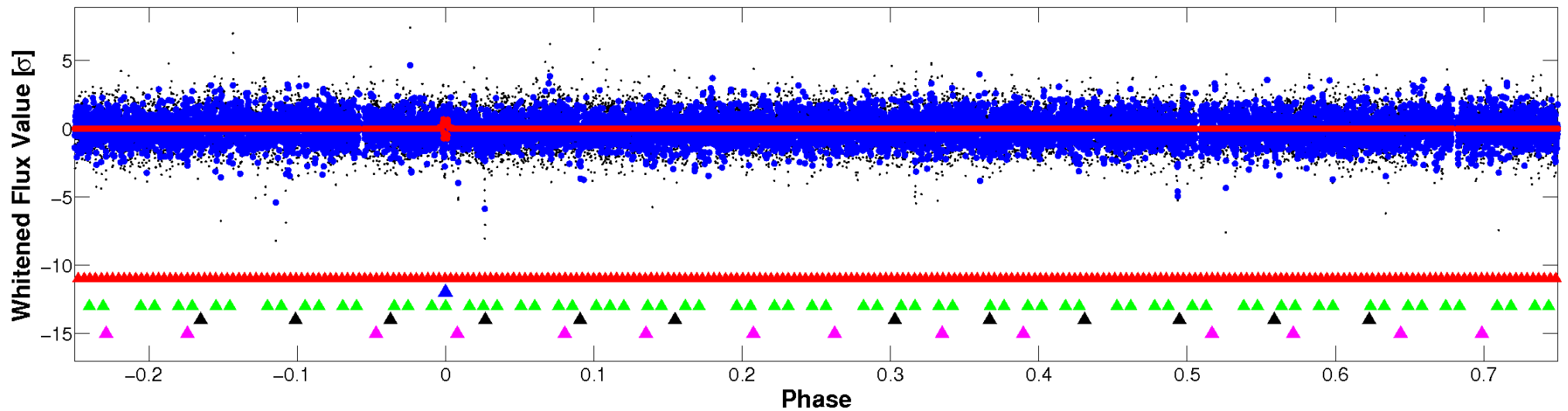


Non-Whitened Vs. Whitened Light Curve

Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

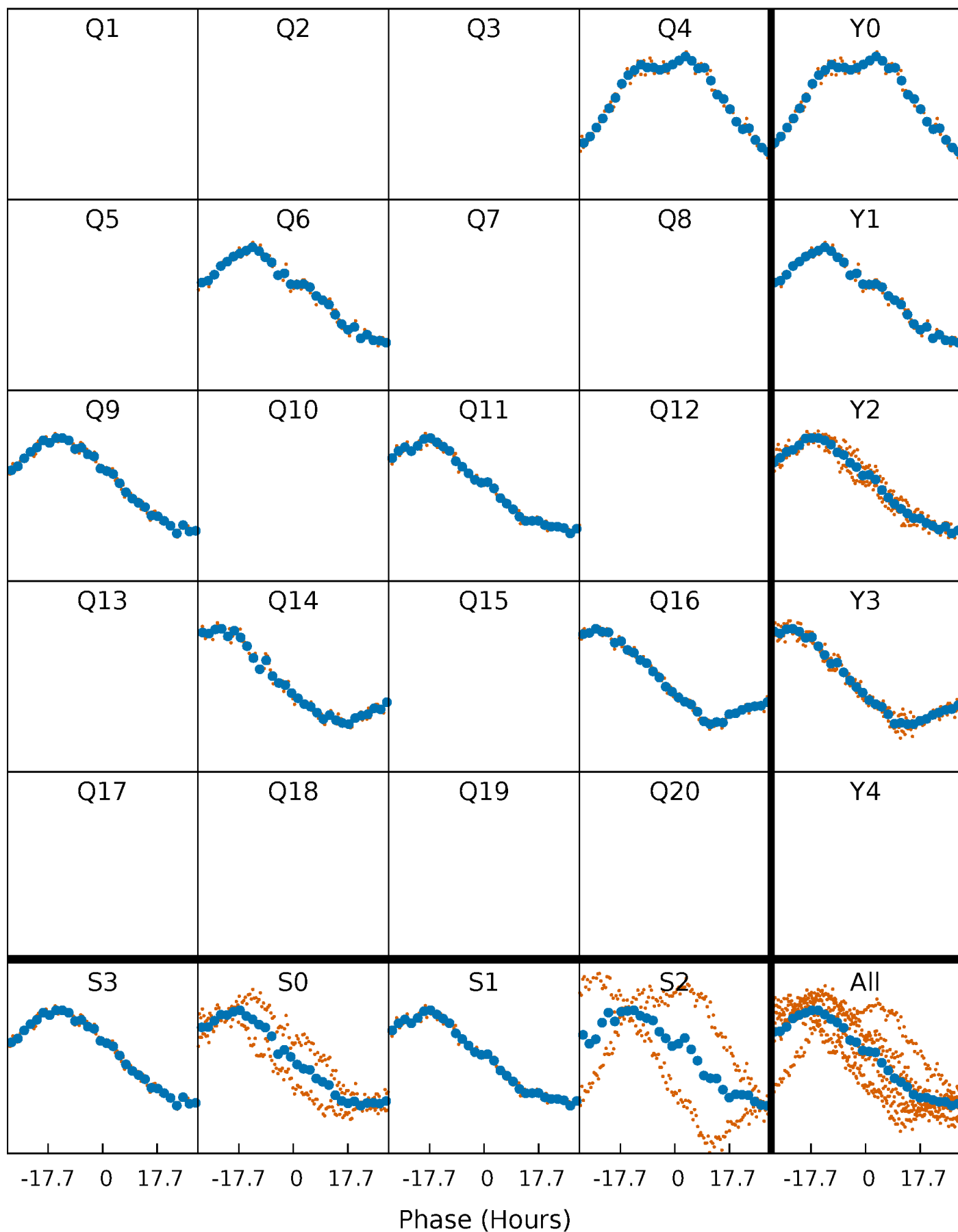


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



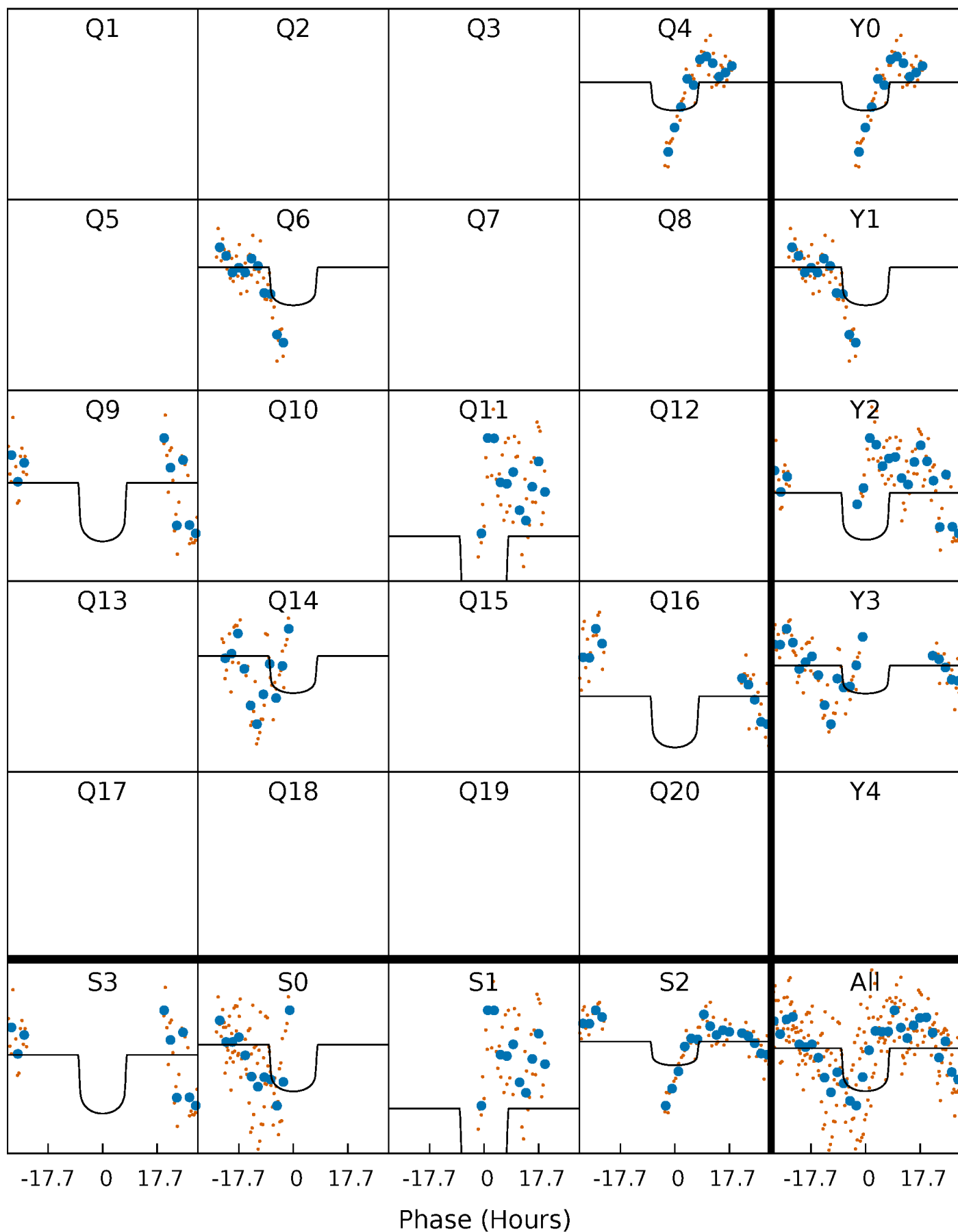
PDC Quarter-Phased Transit Curves

TCE 009099927-02 $P=237.856942$ Days $T_0=363.625022$ (BKJD)



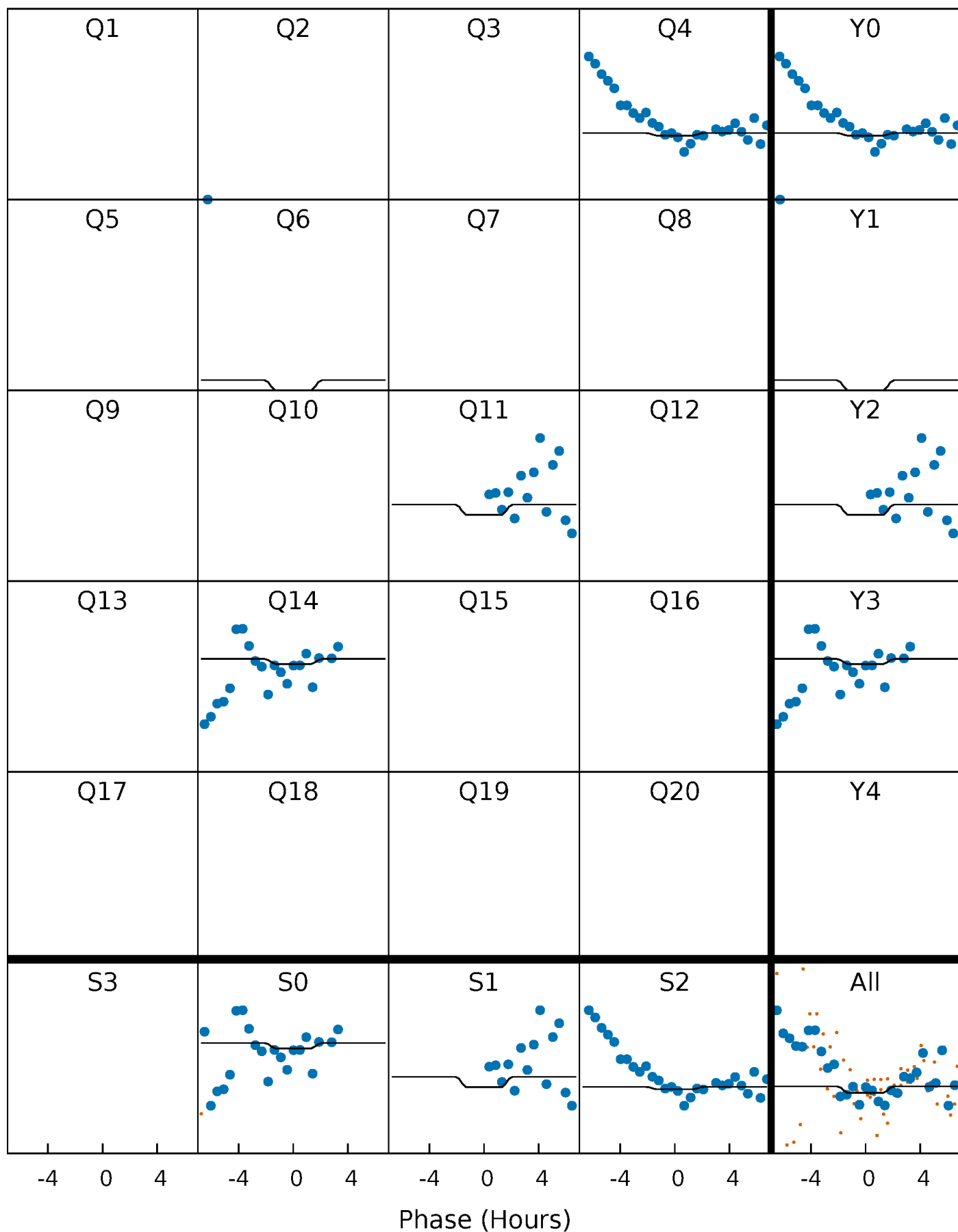
DV Quarter-Phased Transit Curves

TCE 009099927-02 $P=237.856942$ Days $T_0=363.625022$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

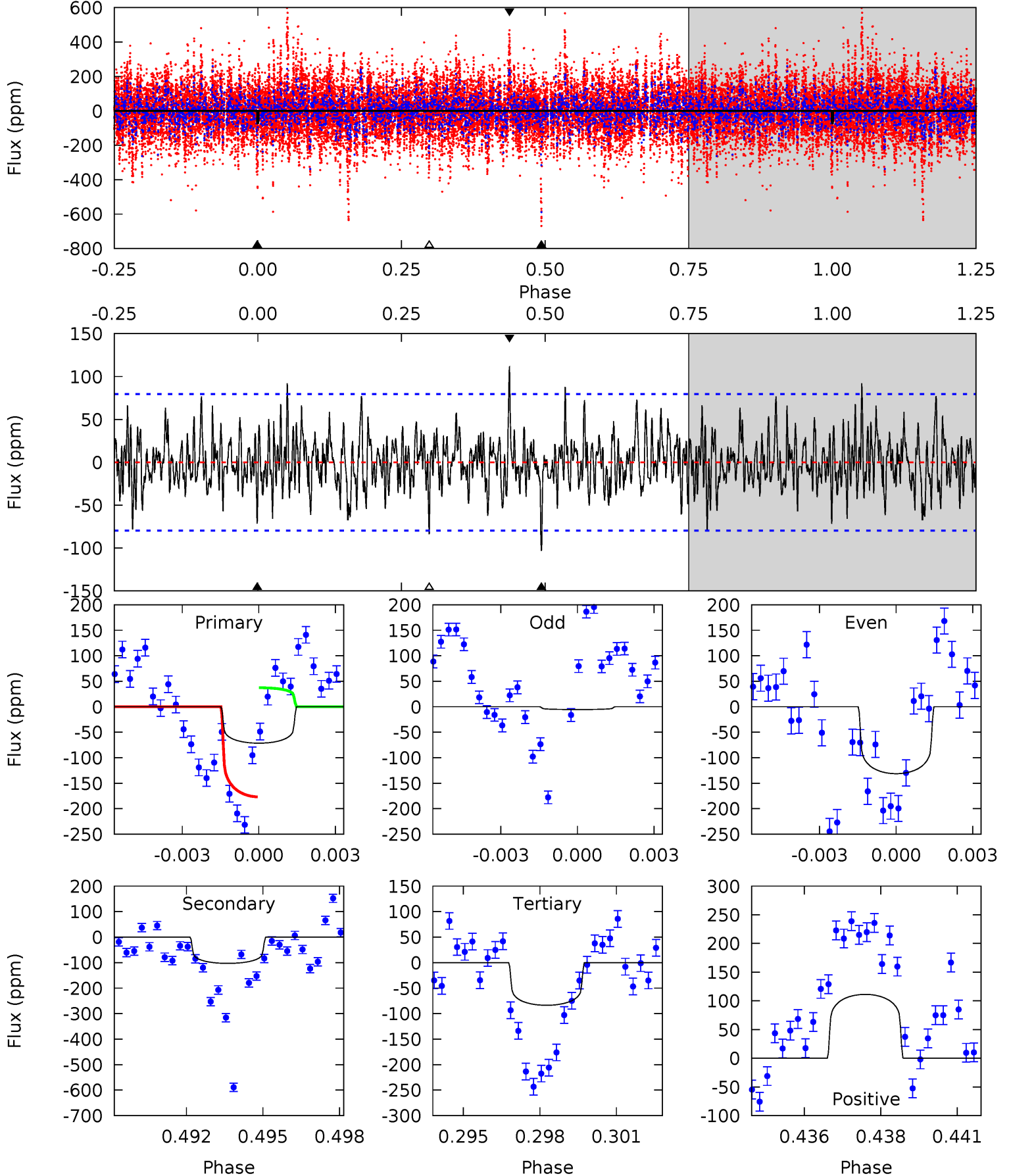
TCE 009099927-02 P=237.748126 Days $T_0=363.866311$ (BKJD)



DV Model-Shift Uniqueness Test

009099927-02, P = 237.856942 Days, E = 125.768080 Days

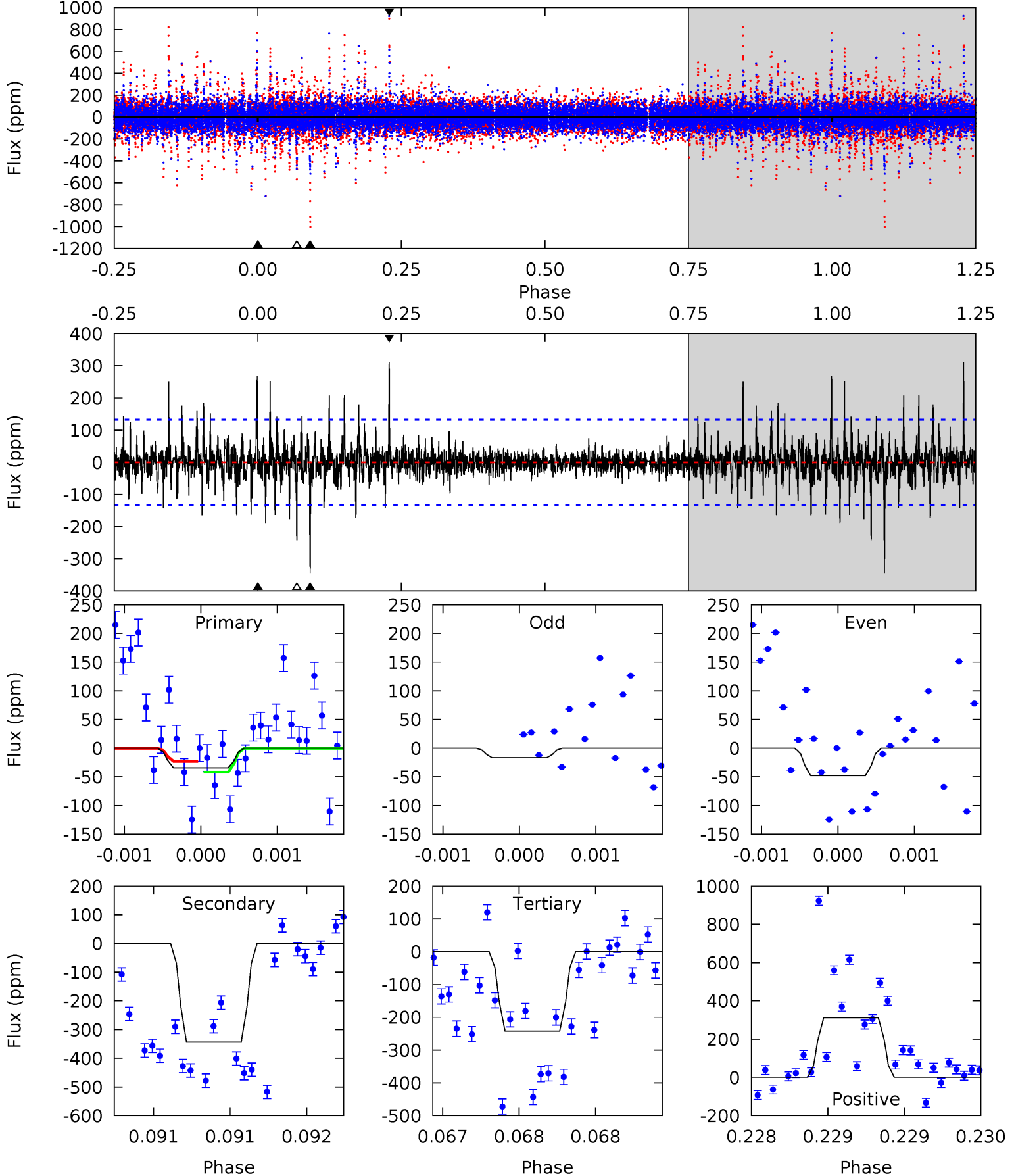
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.73	6.81	5.53	7.36	5.26	2.99	1.72	-0.80	-2.63	1.28	-0.55	4.17	0.89	0.52	4.62



Alt Model-Shift Uniqueness Test

009099927-02, P = 237.748126 Days, E = 126.118185 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.43	14.3	10.1	13.0	5.53	3.41	1.58	-8.66	-11.5	4.25	1.36	0.46	0.74	0.48	0.38



Stellar Parameters For KIC 009099927

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6837^{+183}_{-204}	$3.756^{+0.320}_{-0.080}$	$-0.500^{+0.300}_{-0.250}$	$2.575^{+0.417}_{-0.974}$	$1.380^{+0.230}_{-0.276}$	$0.114^{+0.258}_{-0.038}$
	+3%/-3%	+9%/-2%	+60%/-50%	+16%/-38%	+17%/-20%	+226%/-33%
Source	PHO1	FLK73	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009099927-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-103 ± 15	$3.09^{+1.32}_{-1.25}$	715^{+49}_{-66}	6249^{+1934}_{-853}	4196^{+7845}_{-2123}
Alt.	-344 ± 24	$1.44^{+1.12}_{-0.90}$	720^{+44}_{-64}	16791^{+43769}_{-6312}	$64465^{+378941}_{-43764}$

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

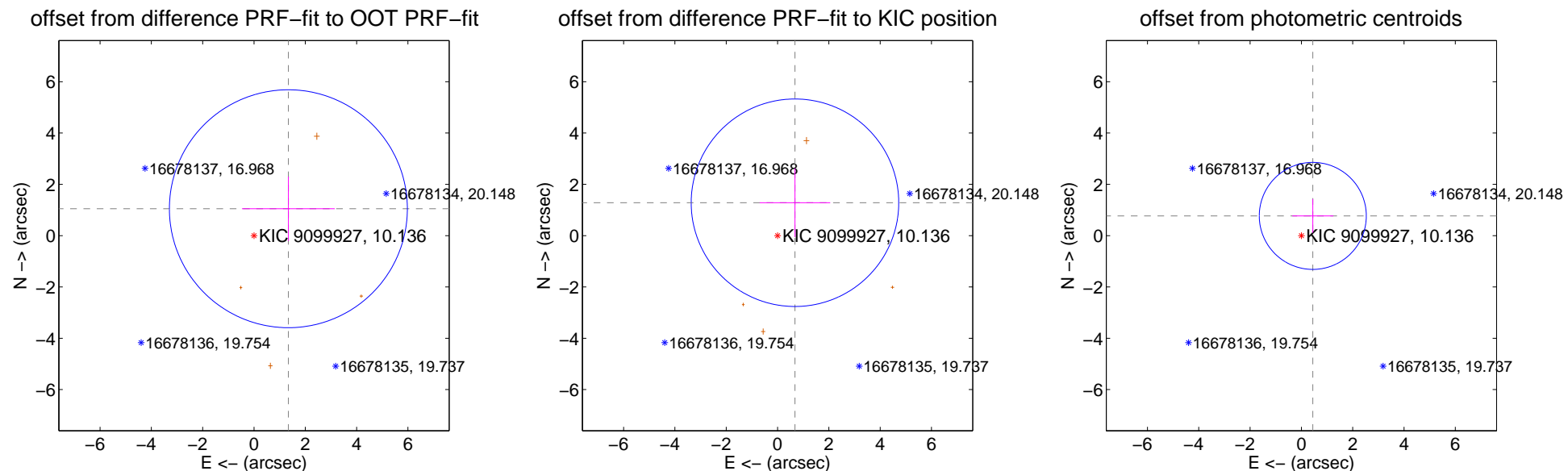
DV Centroid Data

Supplemental centroid analysis for 009099927-02. **Kepler magnitude: 10.14.** Transit SNR 4.65

There are 0 quarters with good PRF difference image offsets

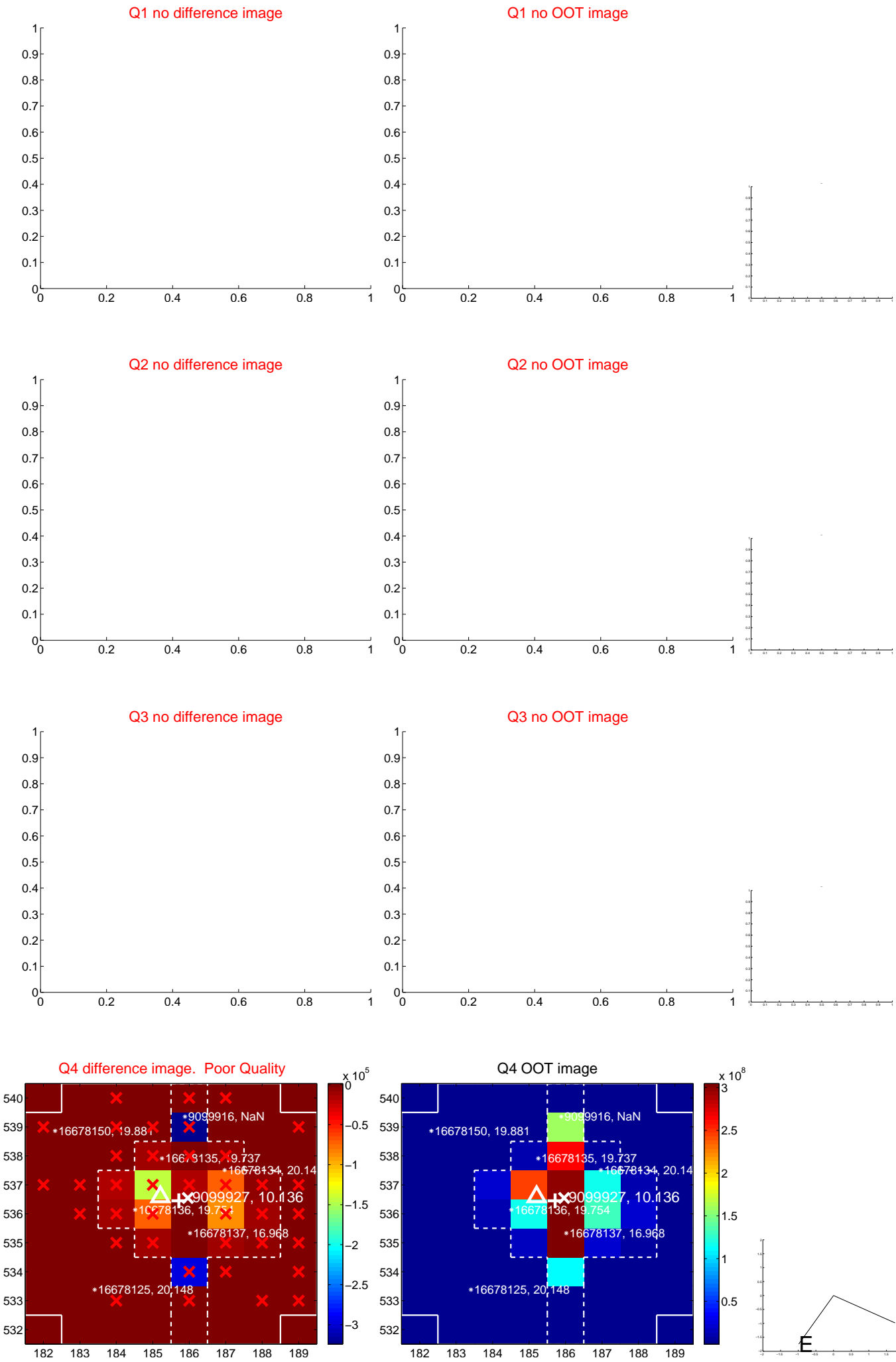
The direct PRF centroid is offset from the target star catalog position by about 1.33 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.702 ± 1.546	1.10	-1.340 ± 1.809	1.049 ± 1.254
PRF-fit source offset from KIC position	1.451 ± 1.348	1.08	-0.679 ± 1.377	1.283 ± 1.340
photometric centroid source offset	0.89 ± 0.70	1.28	-0.44 ± 0.80	0.77 ± 0.66

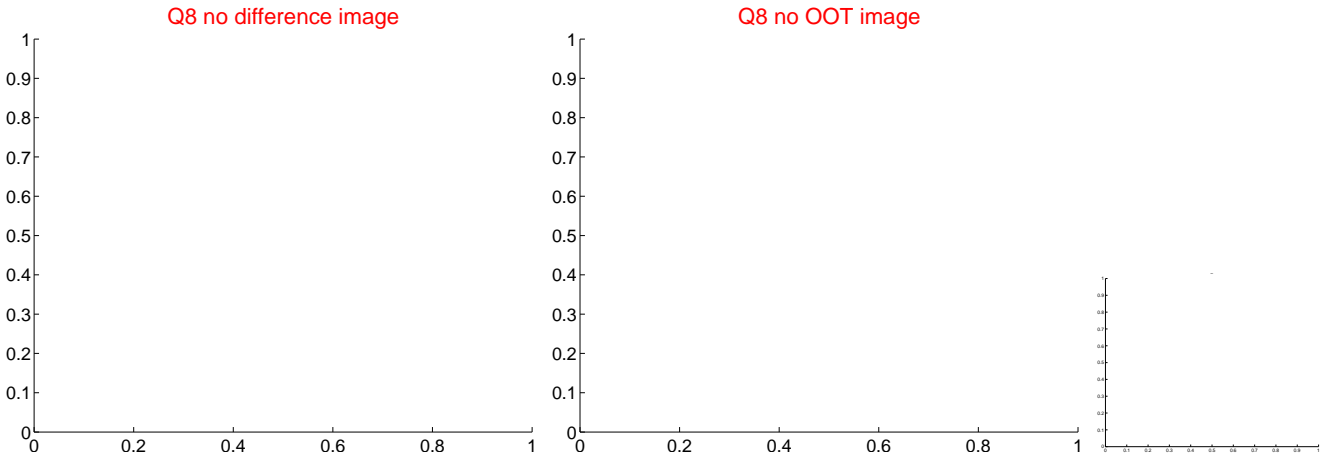
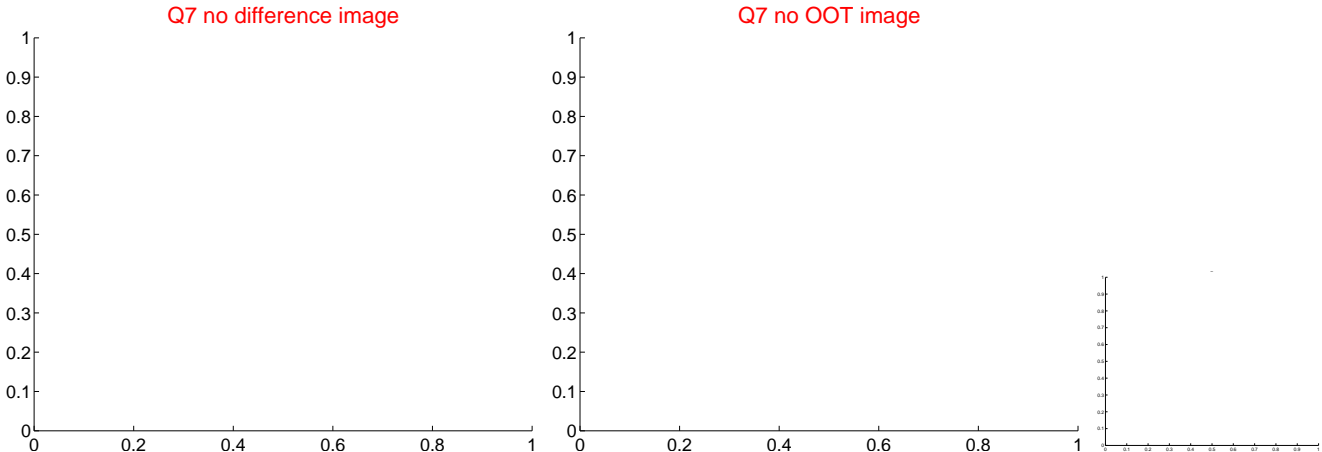
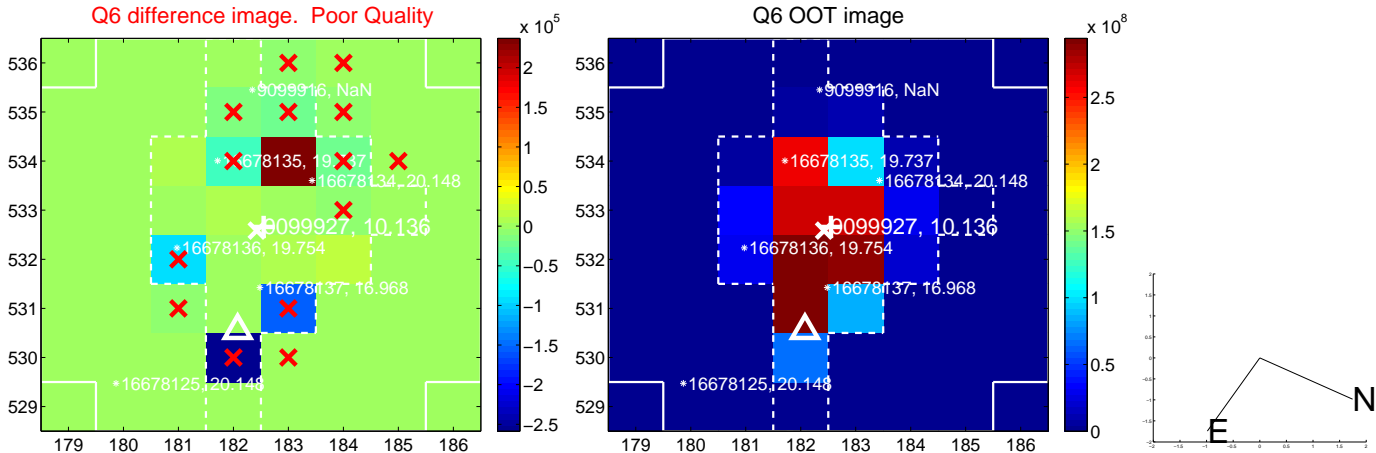
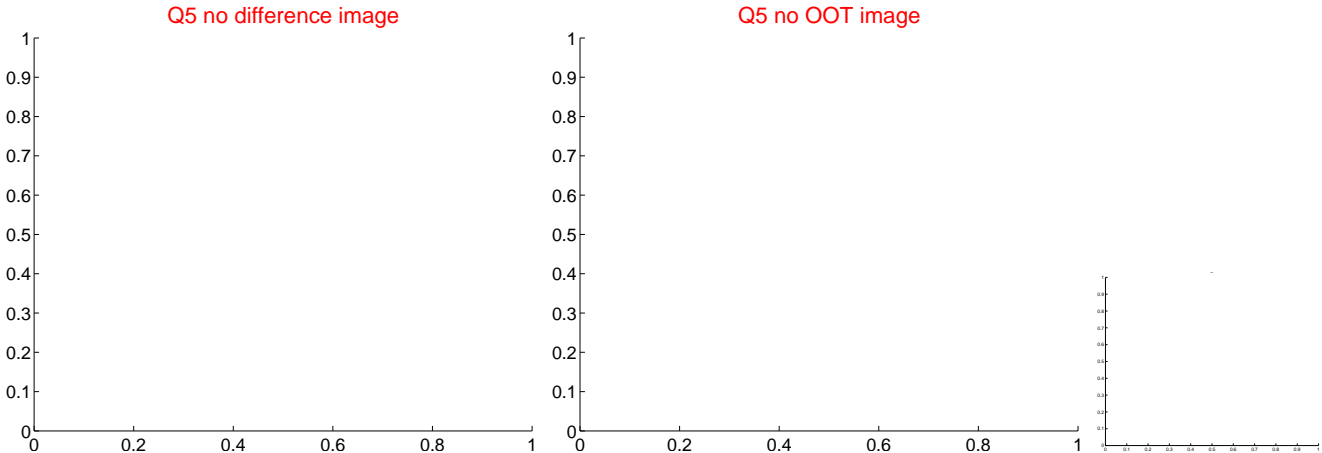


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

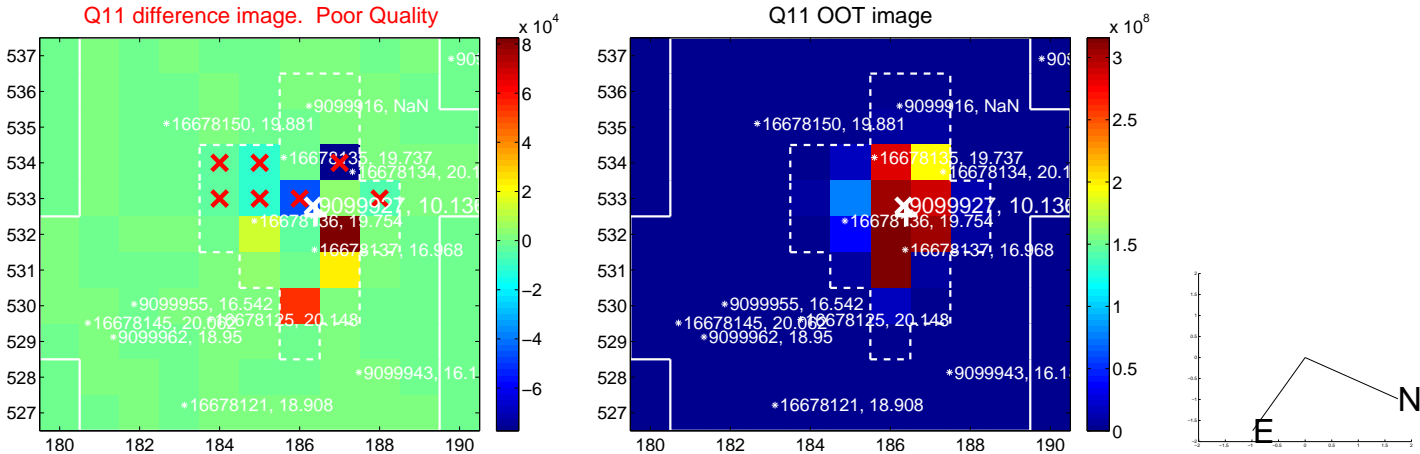
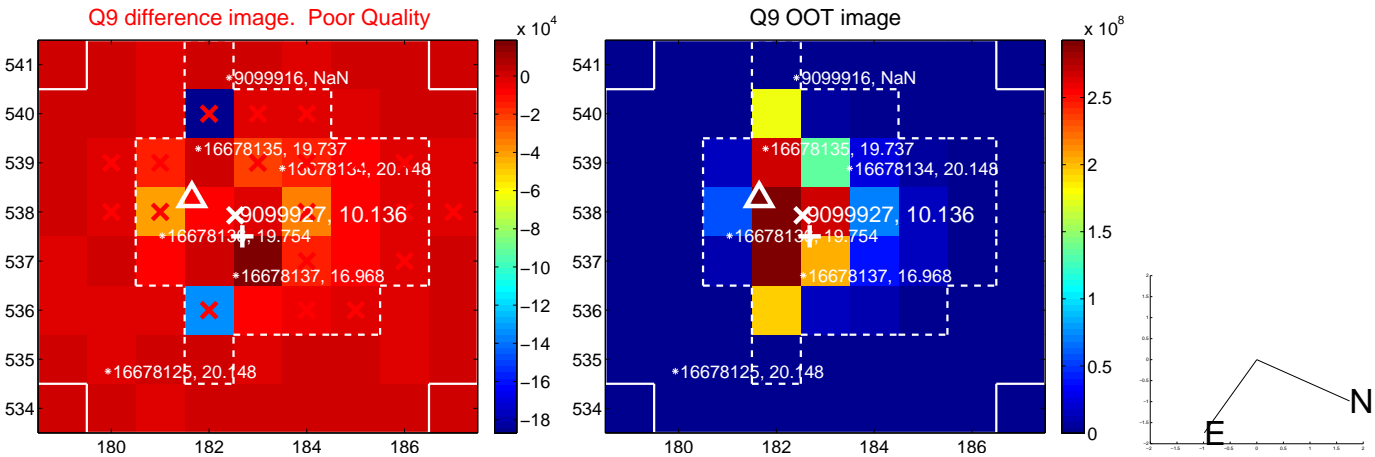
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



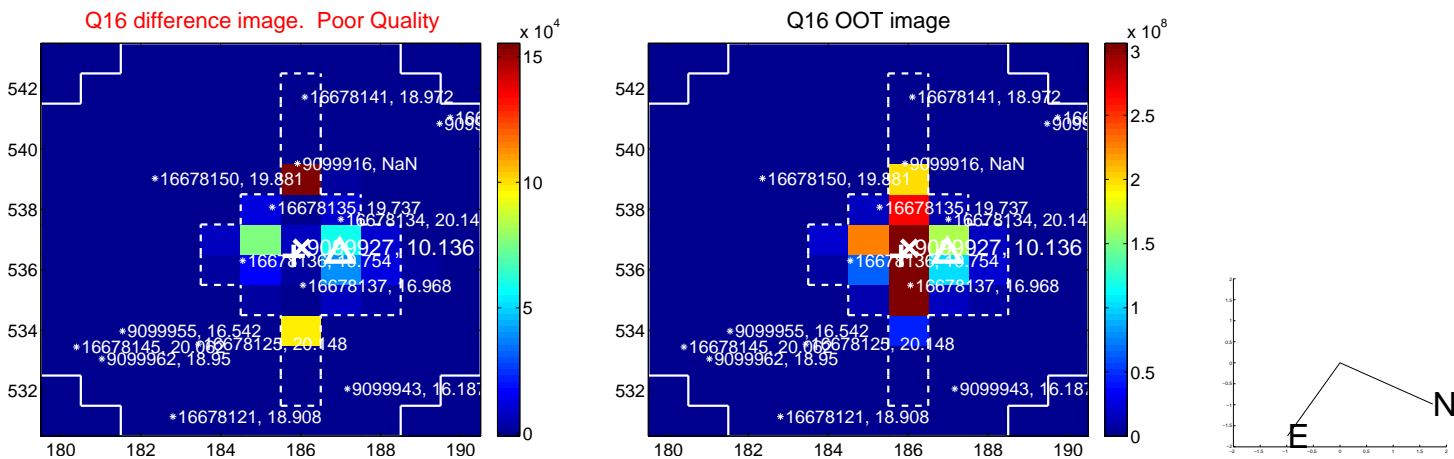
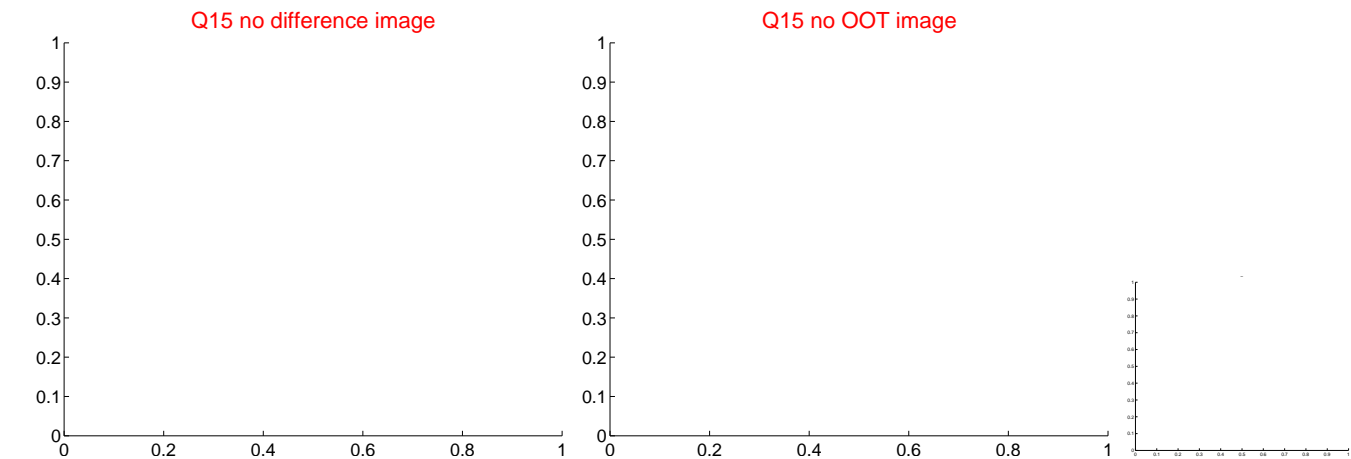
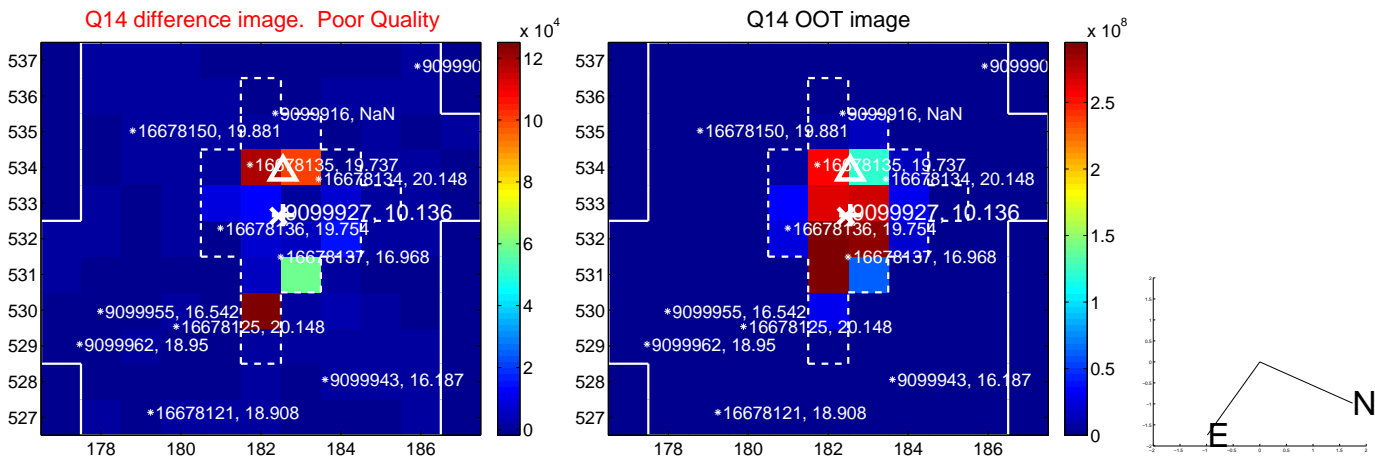
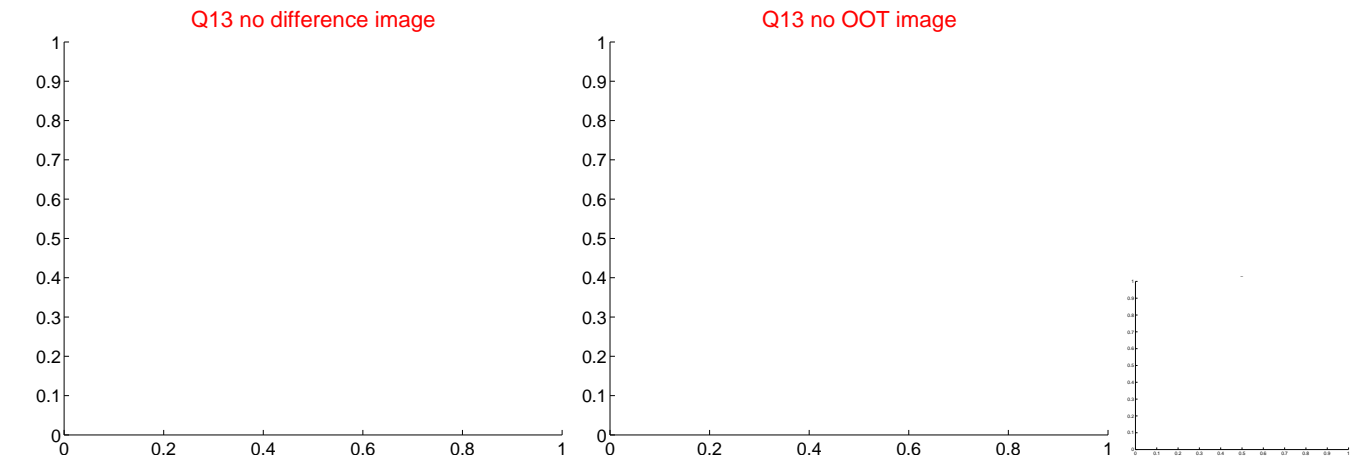
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



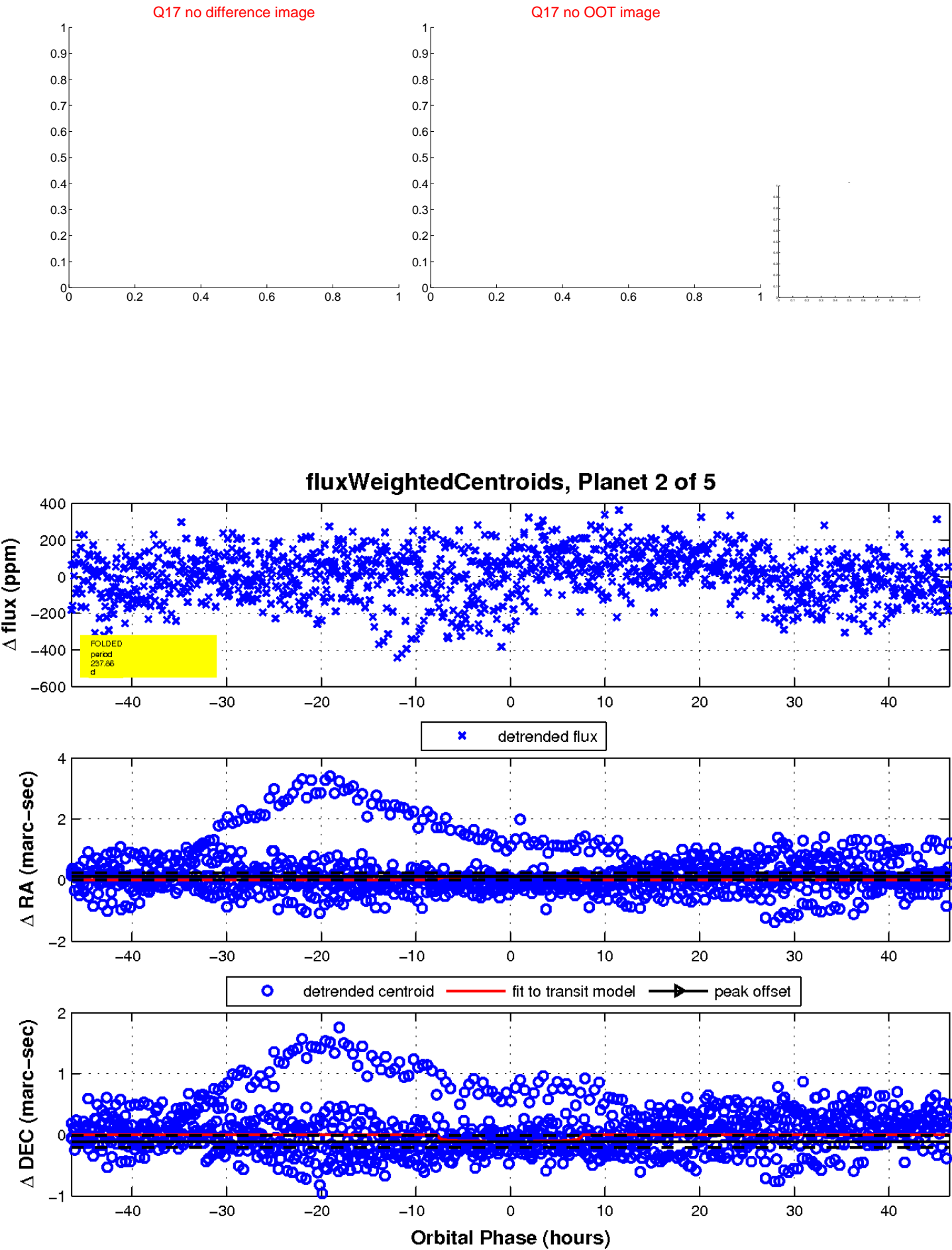
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



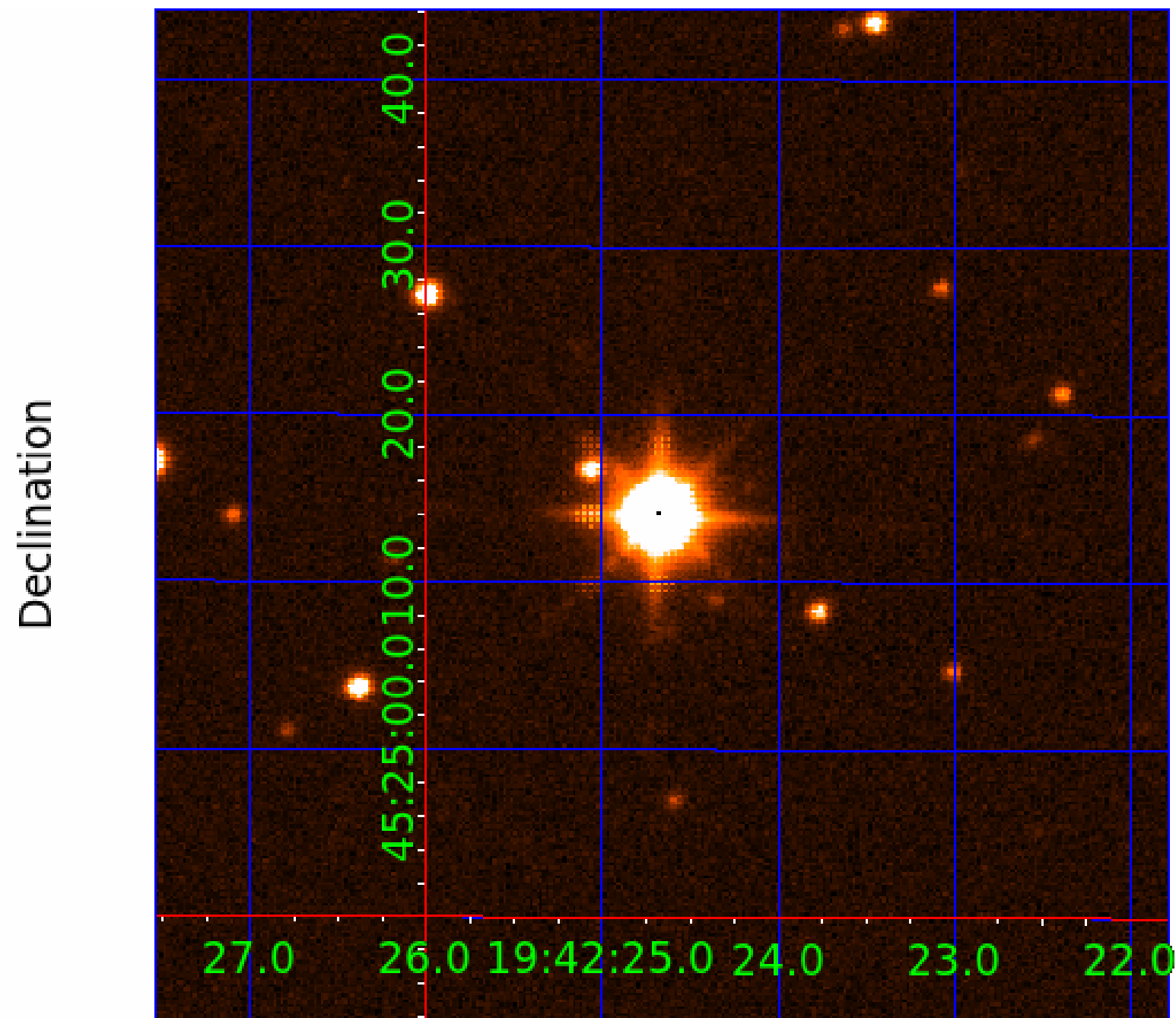
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image



KIC 009099927

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
009099927-01	OBS	No	2.755361	133.864053	19.1	14.513	8.9	7.2	2.58	6837	1.34	7078.97
009099927-02	OBS	No	237.856942	363.625022	149.4	15.485	10.6	4.7	2.58	6837	3.40	18.55
009099927-03	OBS	No	20.324537	134.048496	45.8	22.262	10.1	4.7	2.58	6837	2.00	493.00
009099927-04	OBS	No	126.535257	197.832532	190.1	30.693	16.9	6.7	2.58	6837	4.03	43.05
009099927-05	OBS	No	103.799709	205.409690	205.0	2.830	8.0	8.6	2.58	6837	4.45	56.05

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009099927-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
009099927-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009099927-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
009099927-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
009099927-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

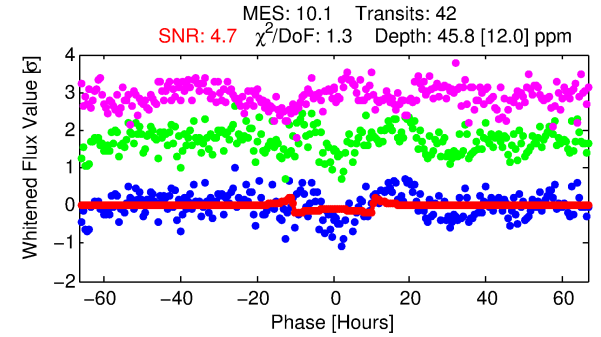
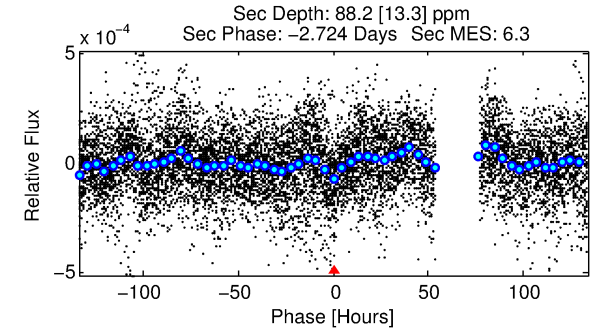
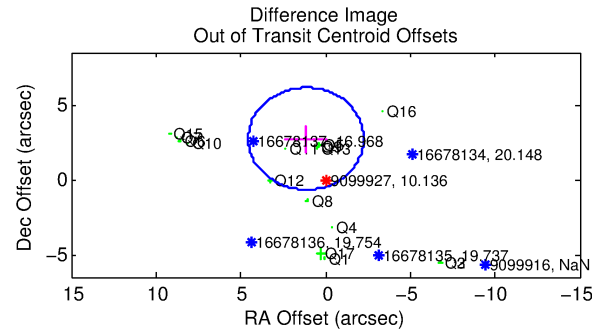
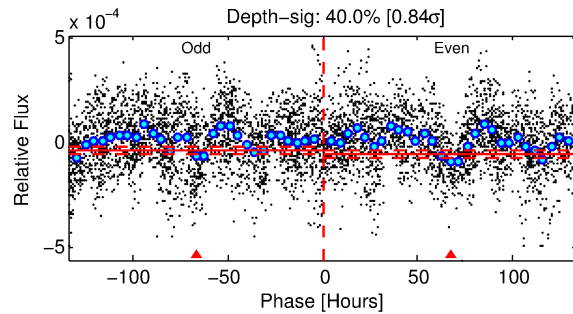
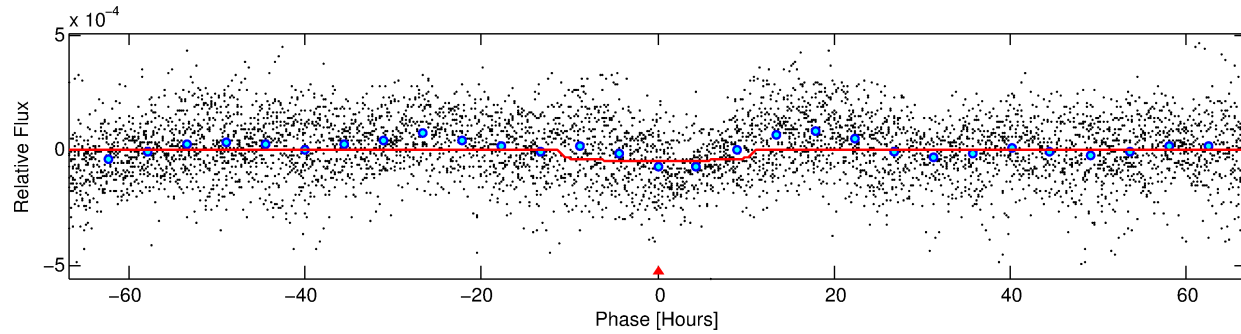
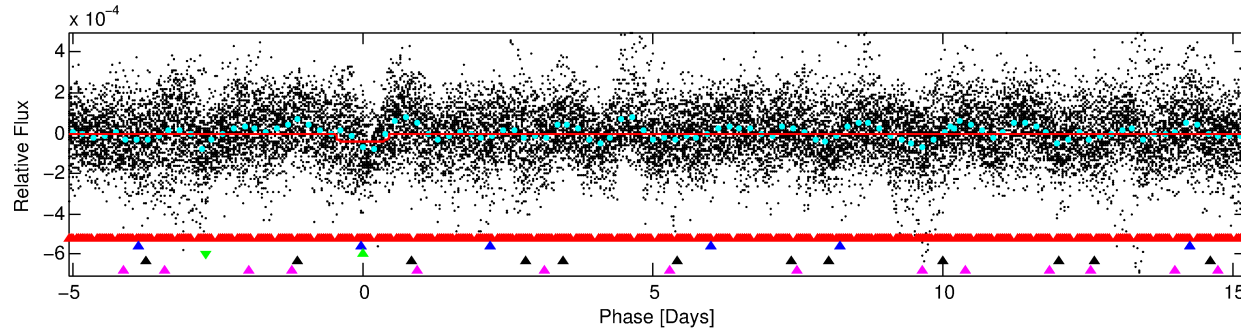
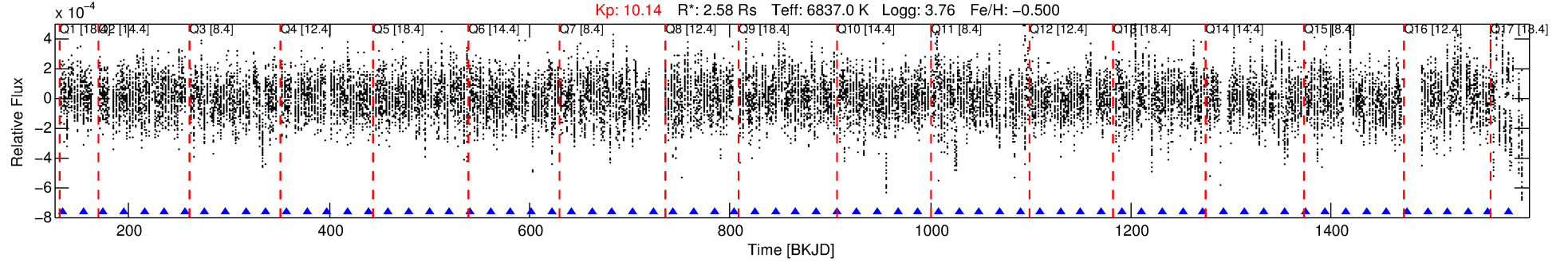
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009099927-03

No Significant Match Found

DV One-Page Summary

KIC: 9099927 Candidate: 3 of 5 Period: 20.325 d



DV Fit Results:

Period = 20.32454 [0.00059] d
Epoch = 134.0485 [0.0241] BKJD
Rp/R* = 0.0071 [0.0012]
a/R* = 3.54 [1.71]
b = 0.88 [0.14]
Seff = 493.00 [278.50]
Teq = 1202 [170] K
Rp = 2.00 [0.83] Re
a = 0.1623 [0.0571] AU
Ag = 319.97 [212.81] [1.50 σ]
Teffp = 7857 [765] K [8.49 σ]

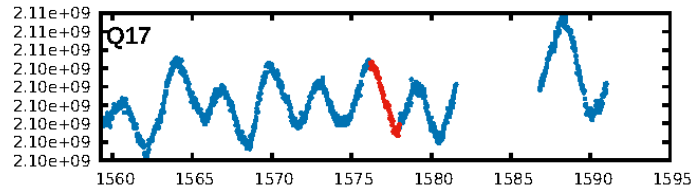
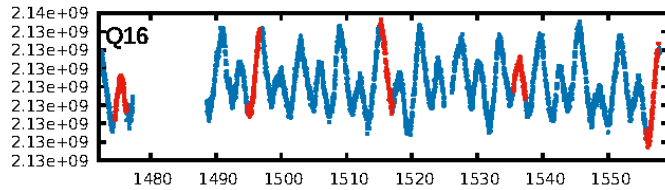
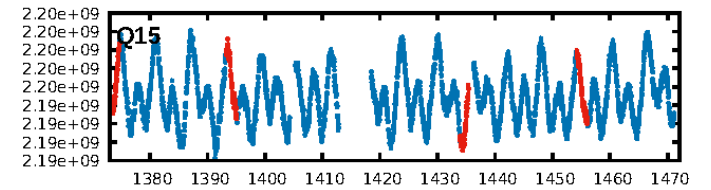
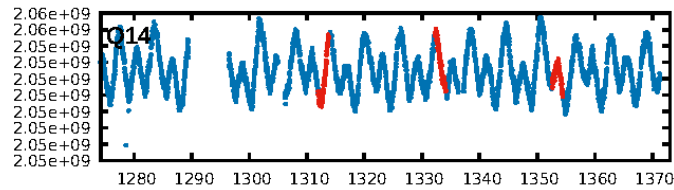
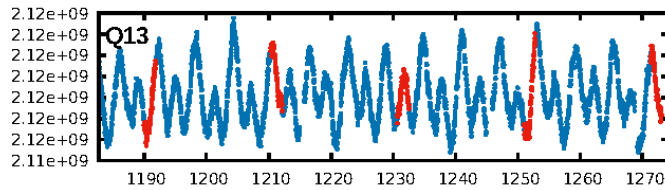
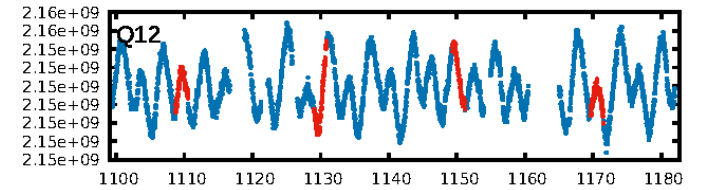
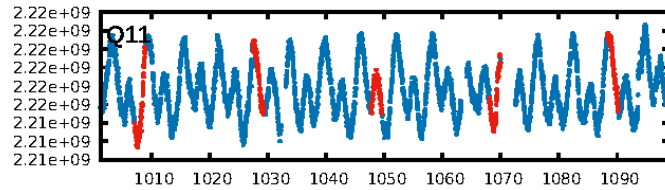
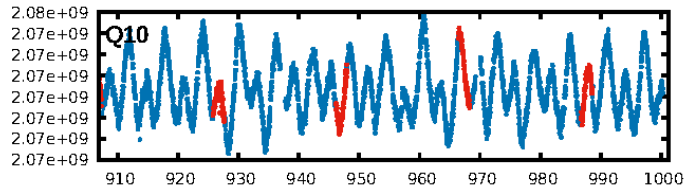
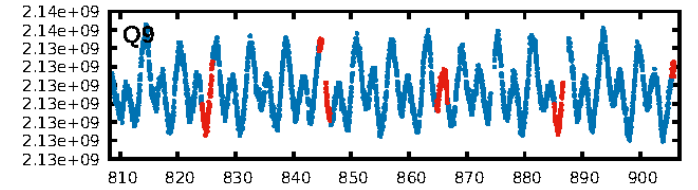
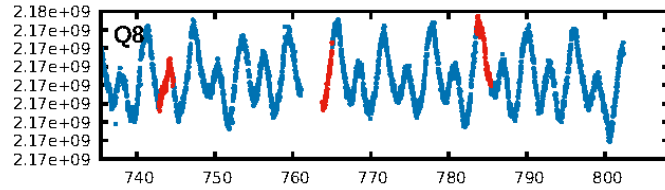
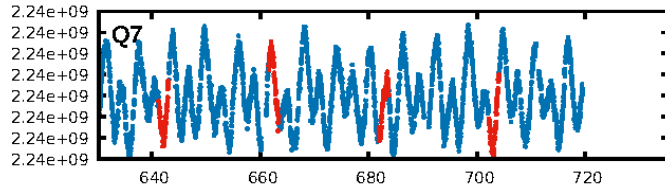
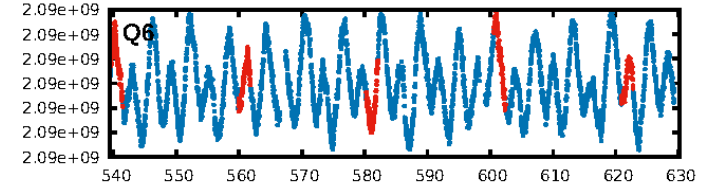
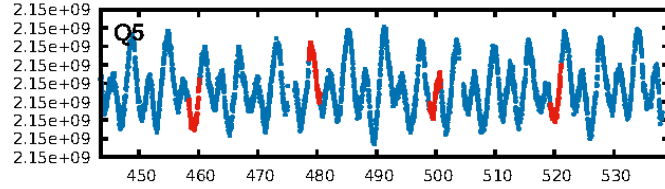
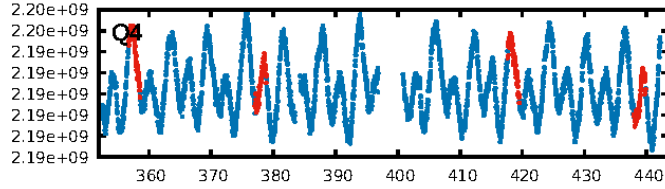
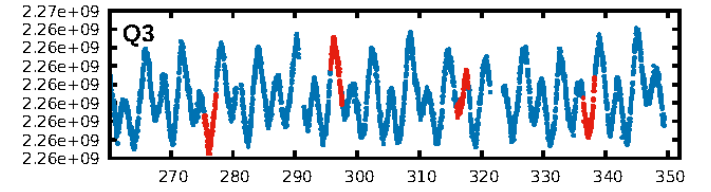
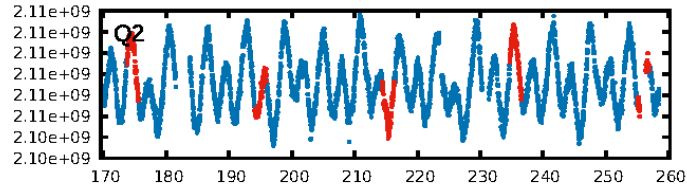
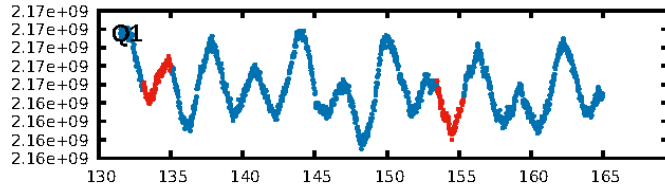
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [15.87 σ]
LongPeriod-sig: 100.0% [89.27 σ]
ModelChiSquare2-sig: 5.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.43e-12
RollingBand-fgt: 1.00 [40/40]
GhostDiagnostic-chr: N/A
Centroid-sig: 29.5%
Centroid-so: 0.505 arcsec [0.66 σ]
OotOffset-rm: 2.971 arcsec [2.62 σ]
OotOffset-st: 3/4/4/5 [16]
KicOffset-rm: 4.265 arcsec [3.57 σ]
KicOffset-st: 3/4/4/5 [16]
DiffImageQuality-fgm: 0.19 [3/16]
DiffImageOverlap-fno: 0.00 [0/17]

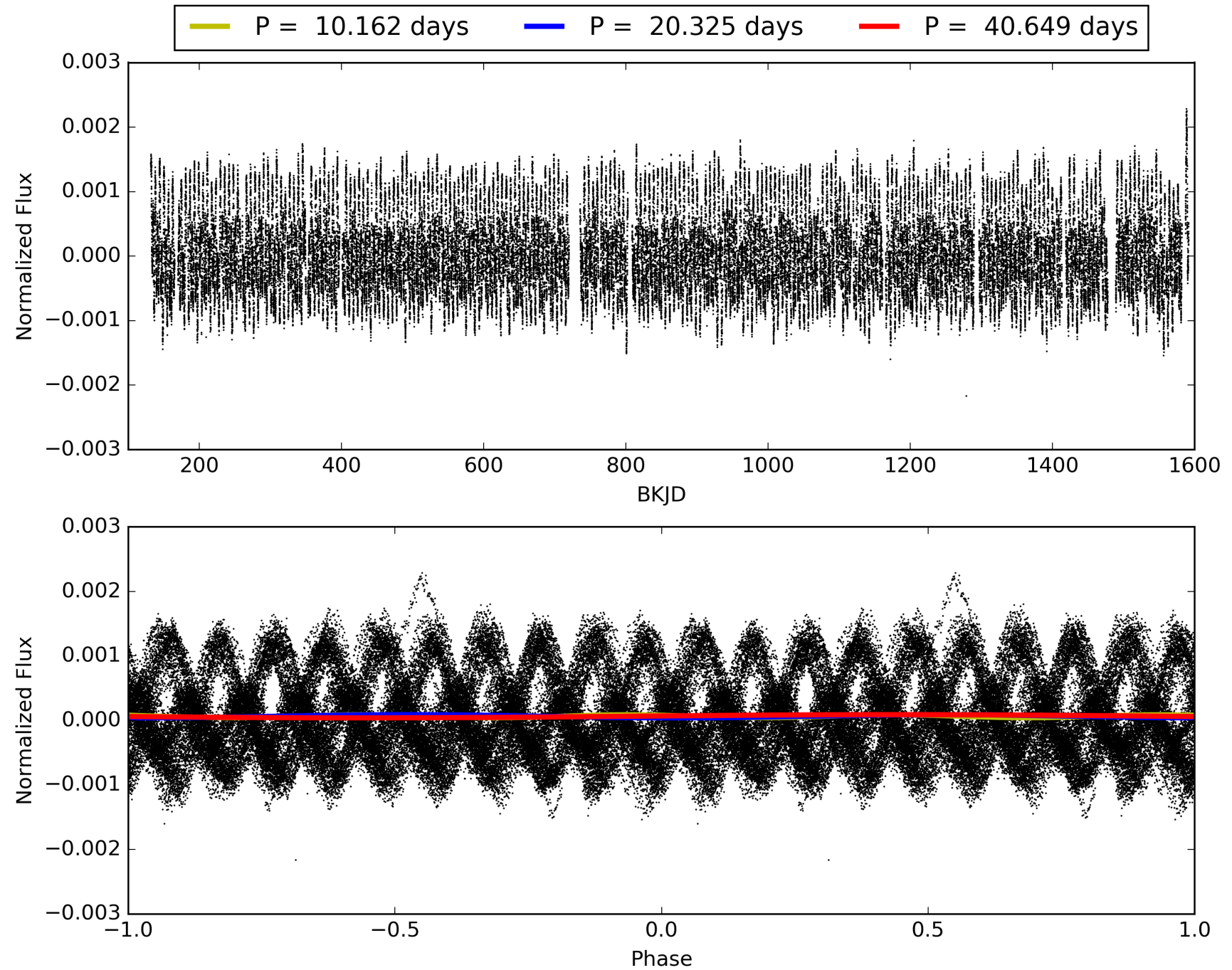
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:51:57 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009099927-03, PDC Light Curves

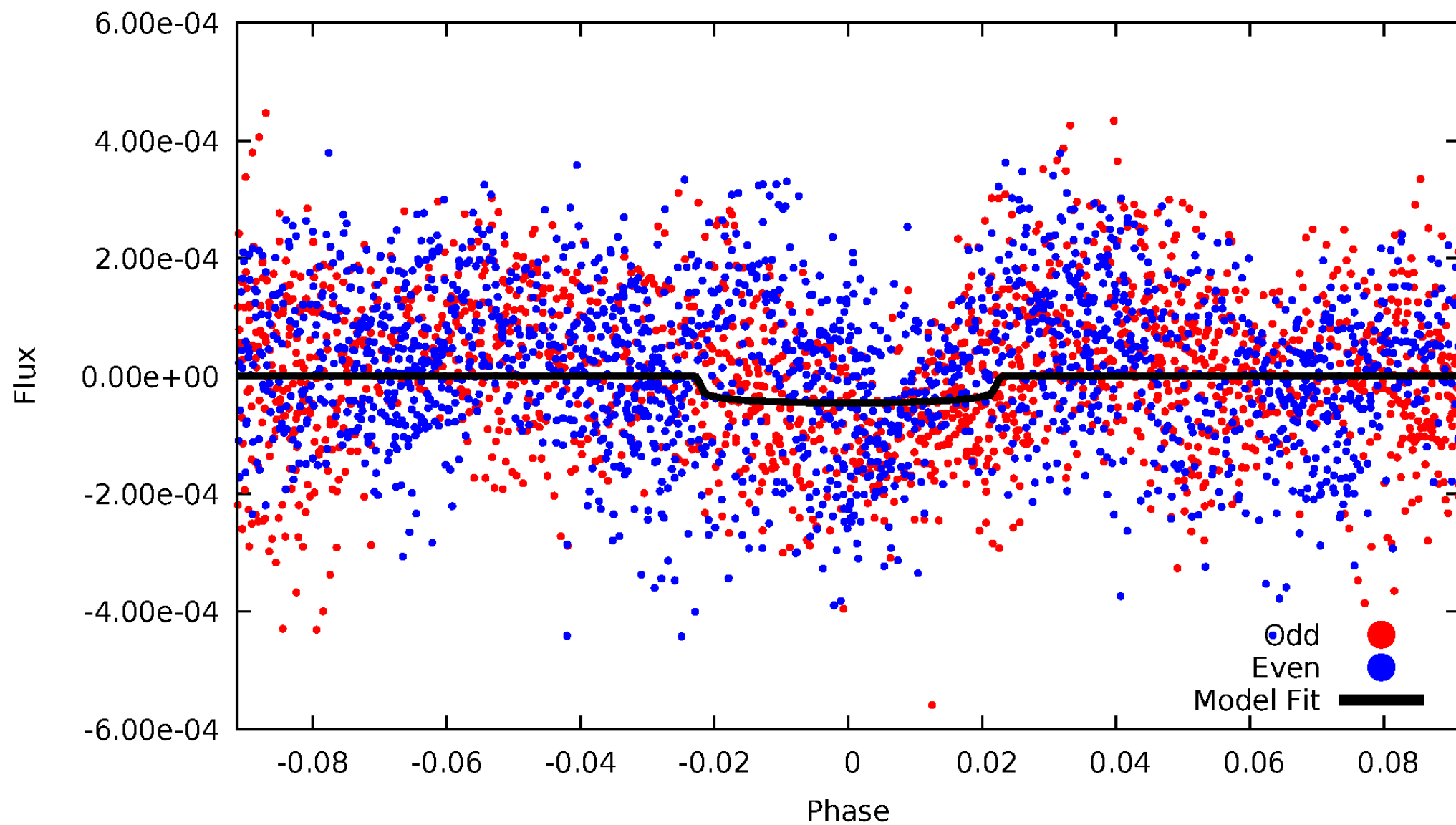


TCE 009099927-03



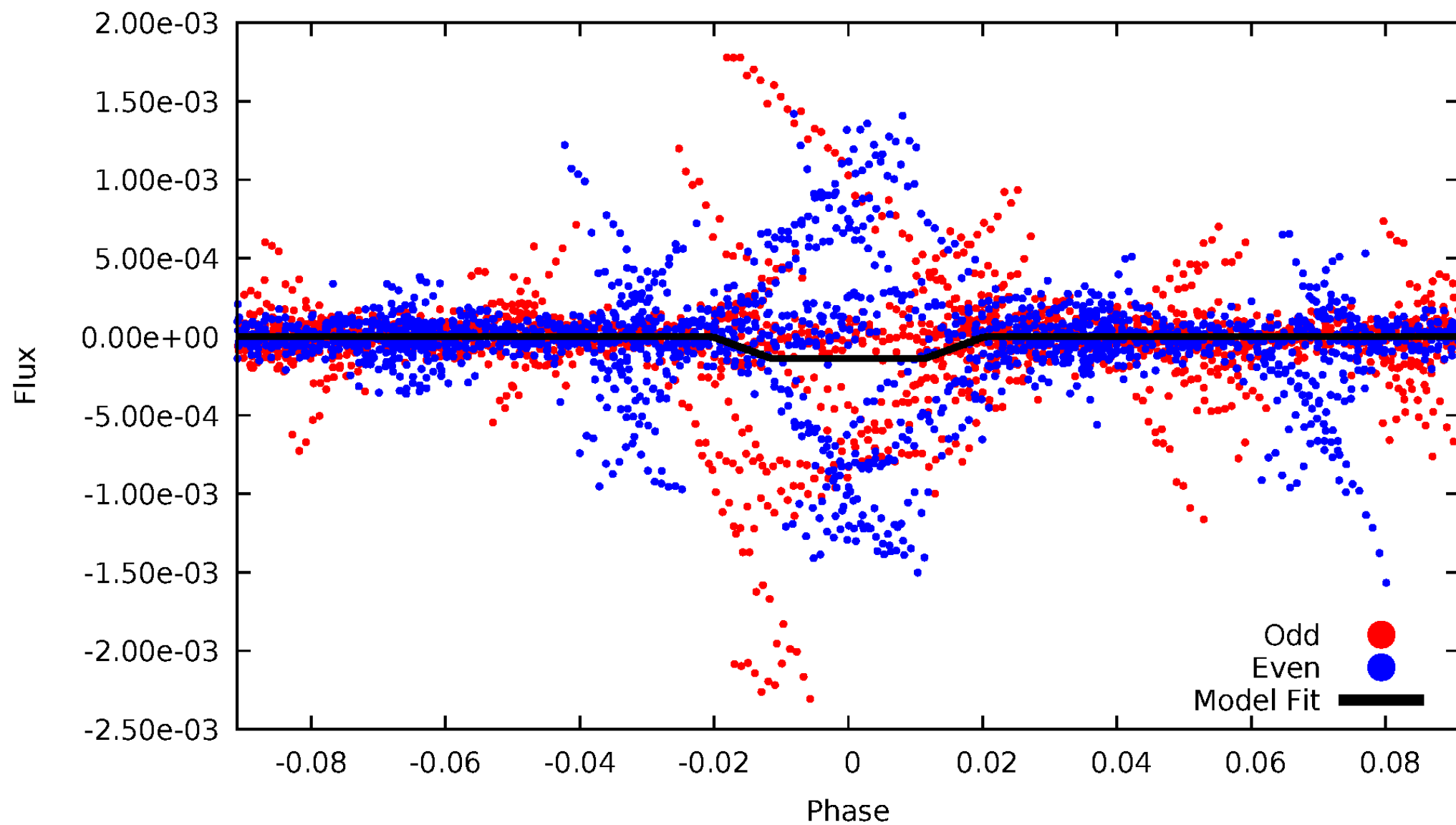
DV Odd/Even

TCE 009099927-03



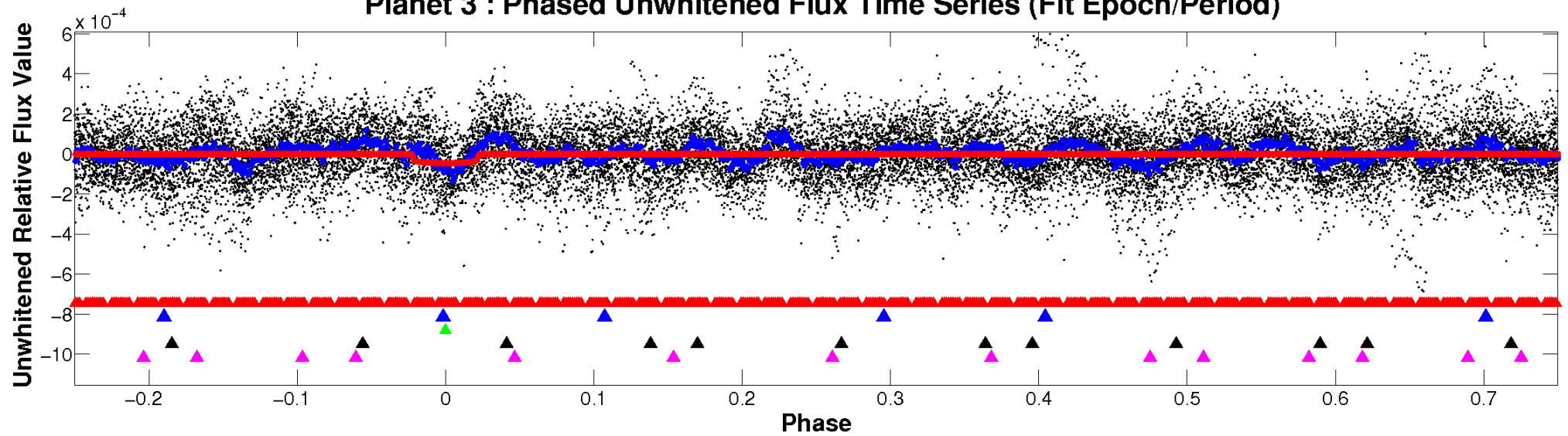
ALT Odd/Even

TCE 009099927-03

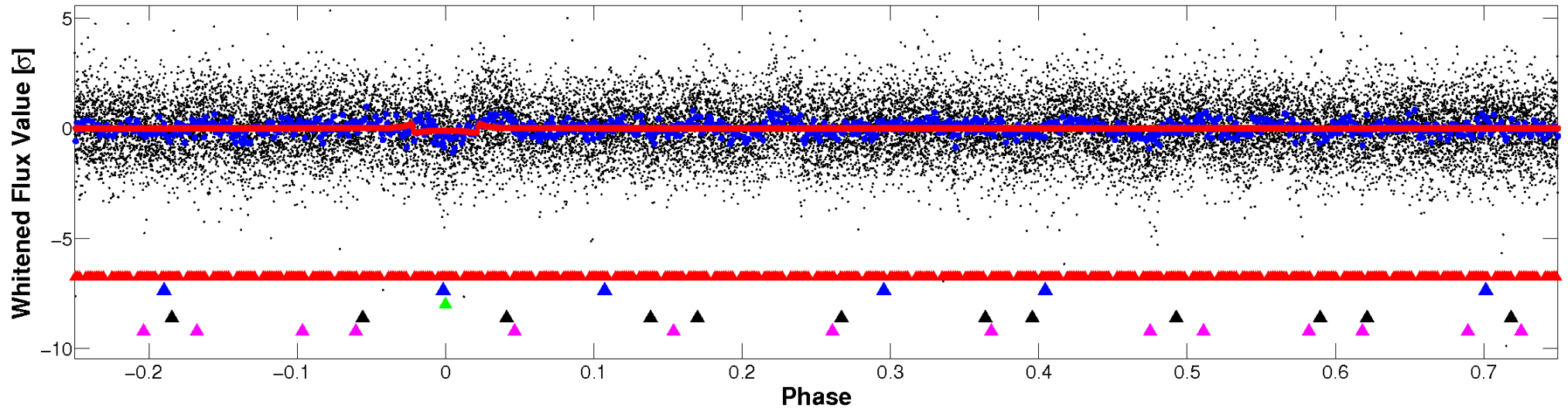


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

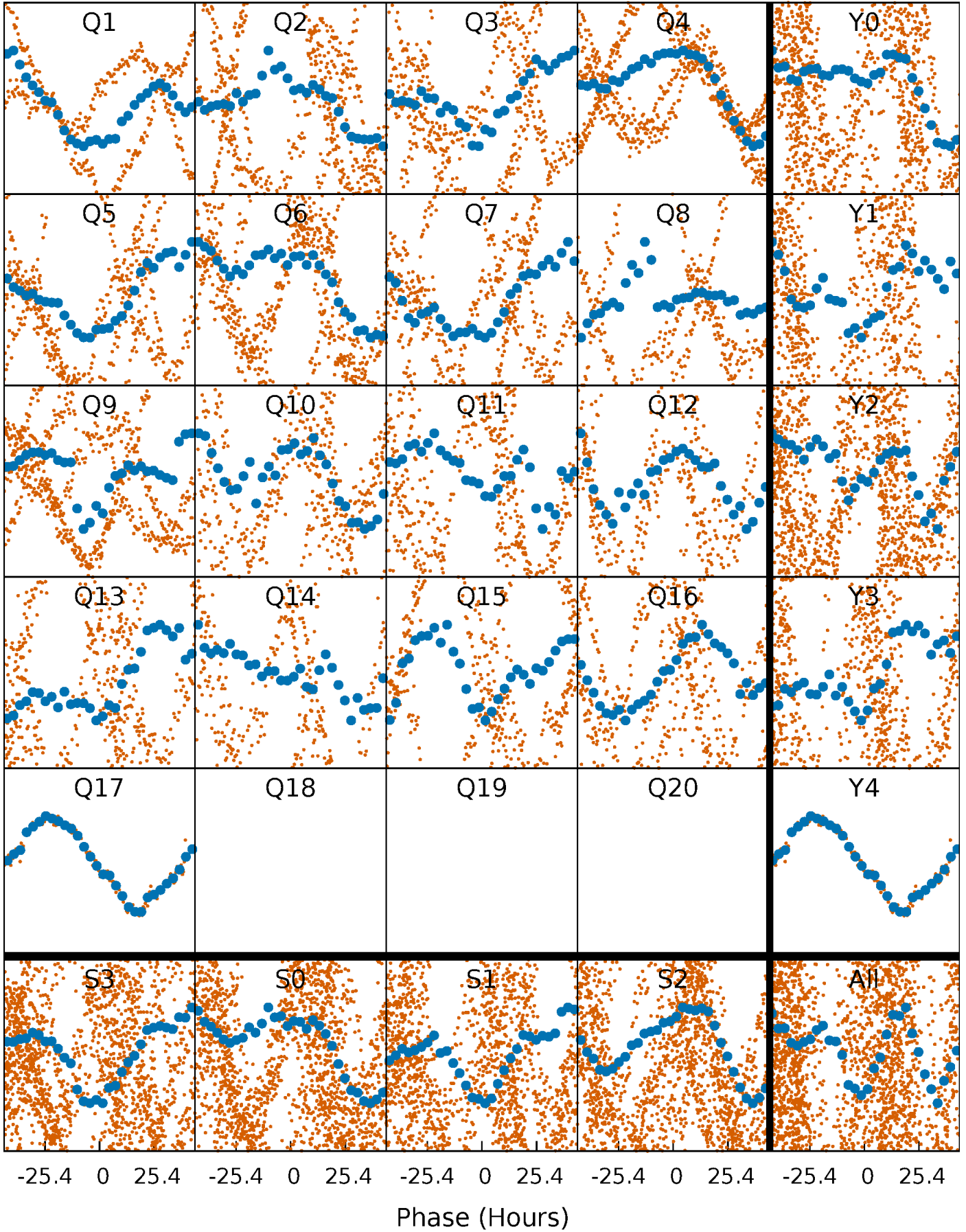


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



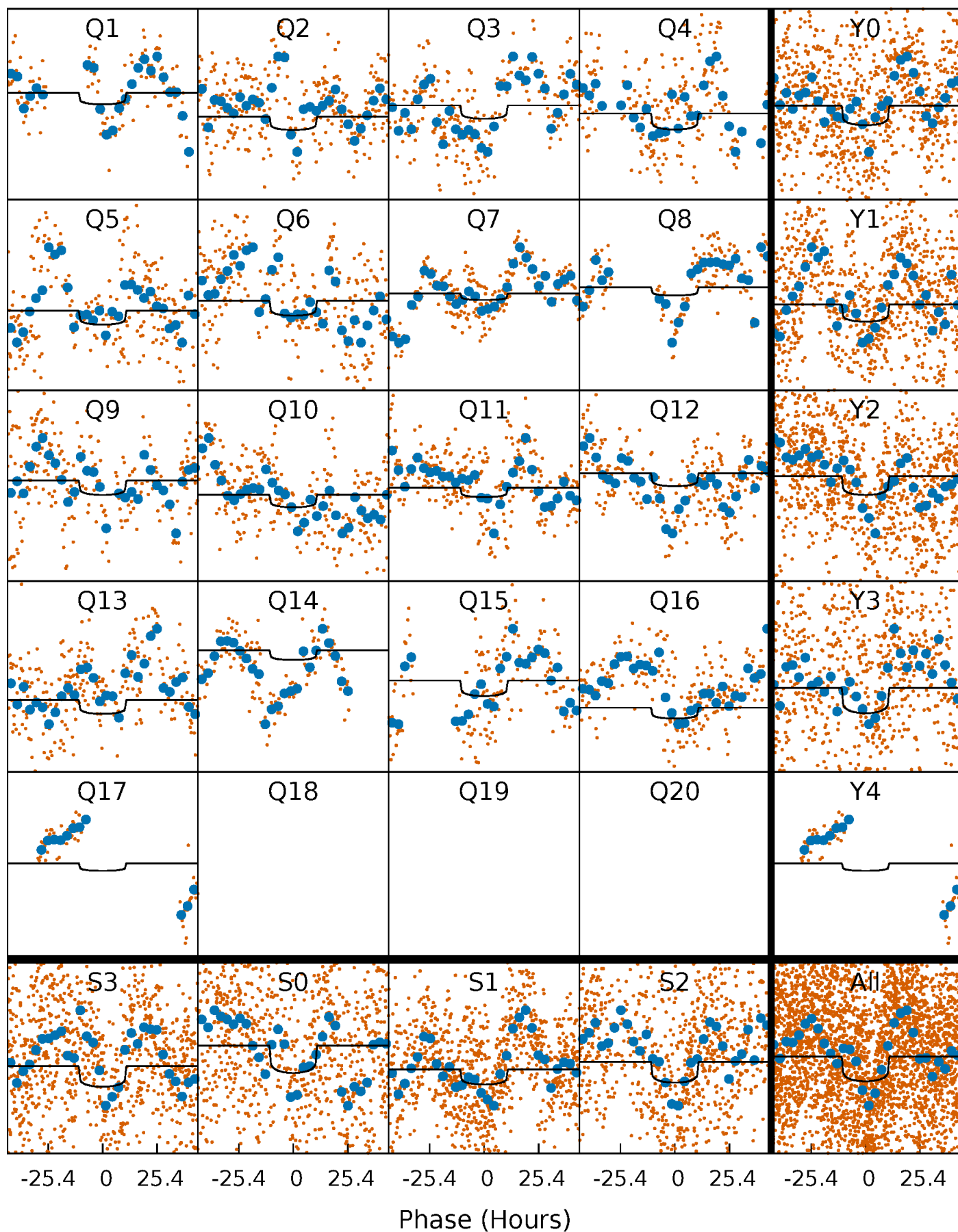
PDC Quarter-Phased Transit Curves

TCE 009099927-03 P= 20.324537 Days $T_0=134.048496$ (BKJD)



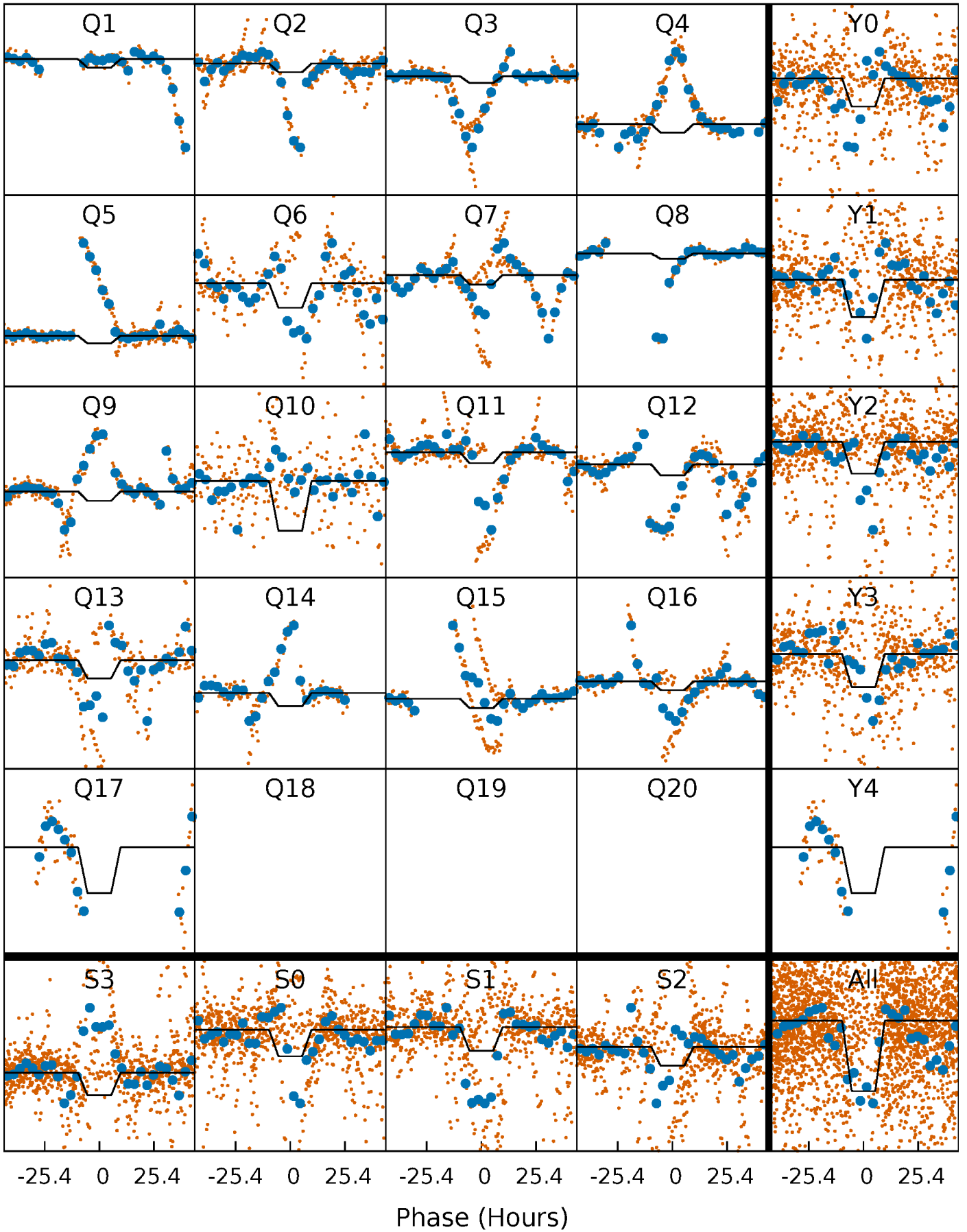
DV Quarter-Phased Transit Curves

TCE 009099927-03 P= 20.324537 Days $T_0=134.048496$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

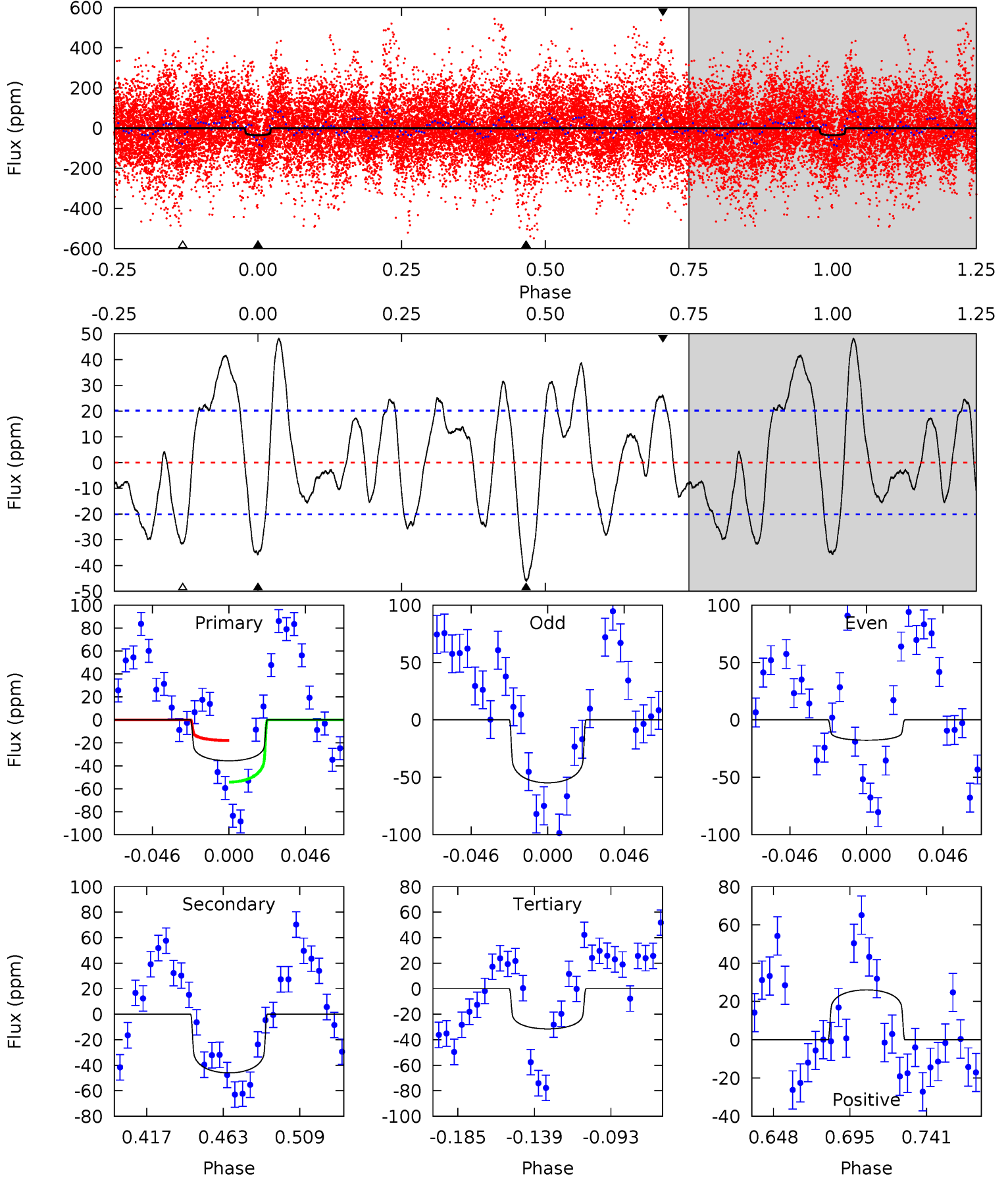
TCE 009099927-03 $P = 20.323790$ Days $T_0 = 134.072677$ (BKJD)



DV Model-Shift Uniqueness Test

009099927-03, P = 20.324537 Days, E = 113.723959 Days

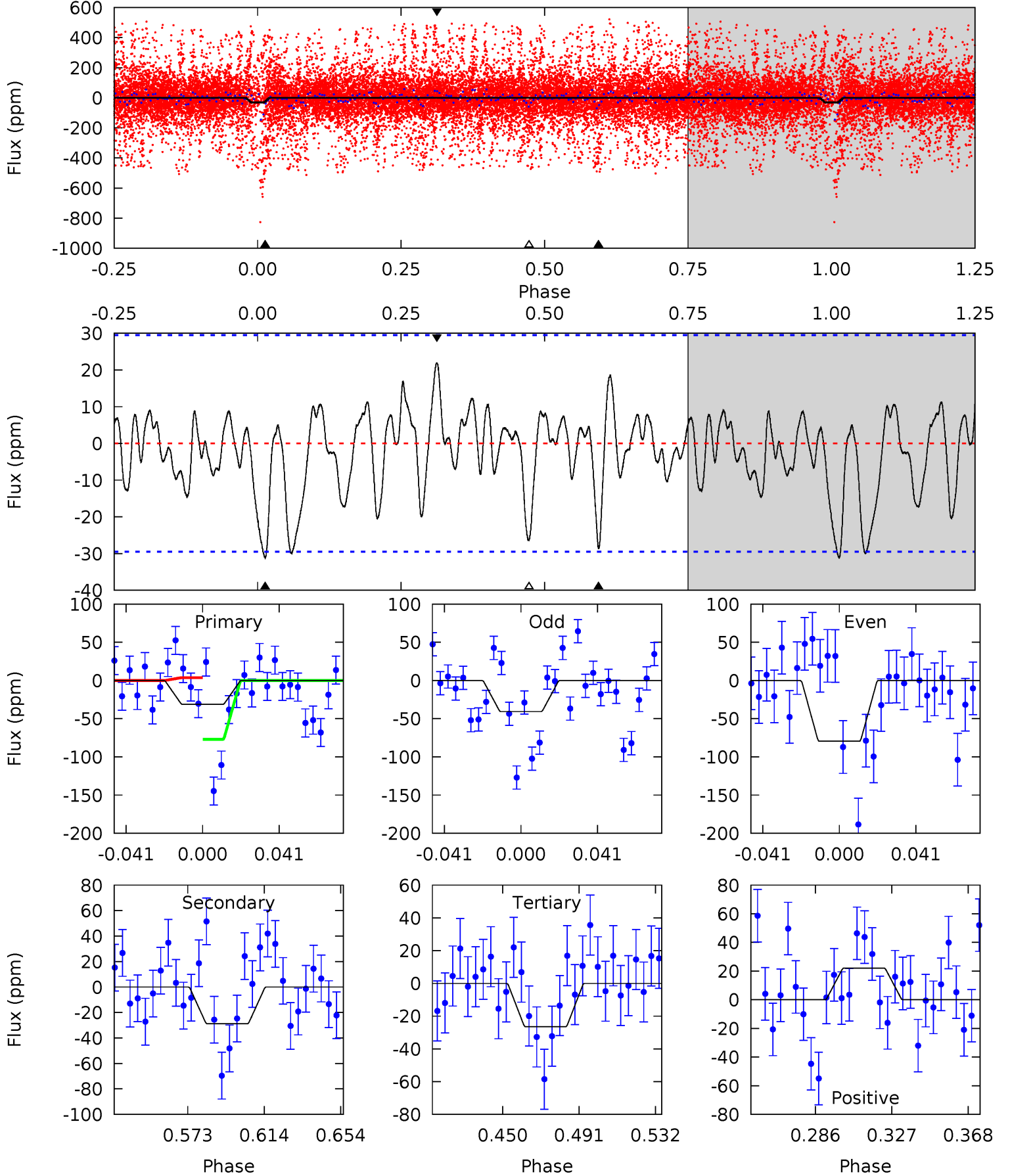
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.36	10.8	7.40	6.11	4.72	1.99	4.17	0.97	2.25	3.40	4.68	4.40	0.78	0.51	4.33



Alt Model-Shift Uniqueness Test

009099927-03, P = 20.323790 Days, E = 113.748887 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.03	4.64	4.25	3.55	4.75	2.04	1.41	0.78	1.48	0.38	1.08	3.15	8.49	0.41	0



Stellar Parameters For KIC 009099927

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6837^{+183}_{-204}	$3.756^{+0.320}_{-0.080}$	$-0.500^{+0.300}_{-0.250}$	$2.575^{+0.417}_{-0.974}$	$1.380^{+0.230}_{-0.276}$	$0.114^{+0.258}_{-0.038}$
	+3%/-3%	+9%/-2%	+60%/-50%	+16%/-38%	+17%/-20%	+226%/-33%
Source	PHO1	FLK73	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009099927-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-46 ± 4	$1.87^{+0.41}_{-0.46}$	1634^{+102}_{-157}	6698^{+739}_{-592}	192^{+150}_{-60}
Alt.	-29 ± 6	$3.20^{+0.59}_{-0.64}$	1644^{+94}_{-139}	4692^{+336}_{-291}	42^{+23}_{-13}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

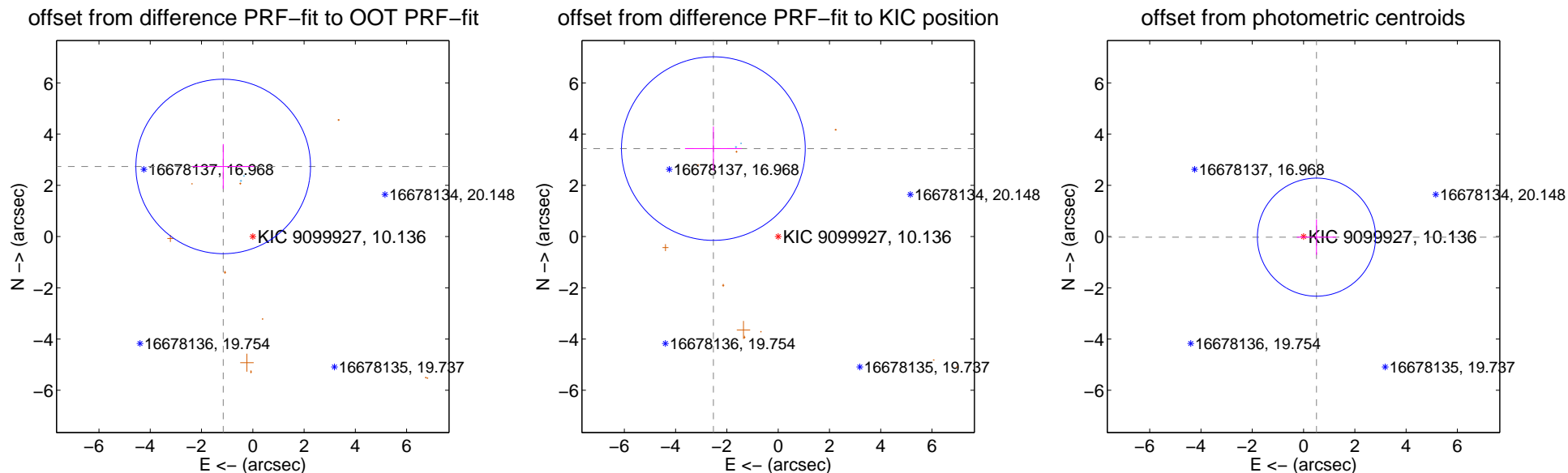
DV Centroid Data

Supplemental centroid analysis for 009099927-03. **Kepler magnitude: 10.14.** Transit SNR 4.74

There are 3 quarters with good PRF difference image offsets

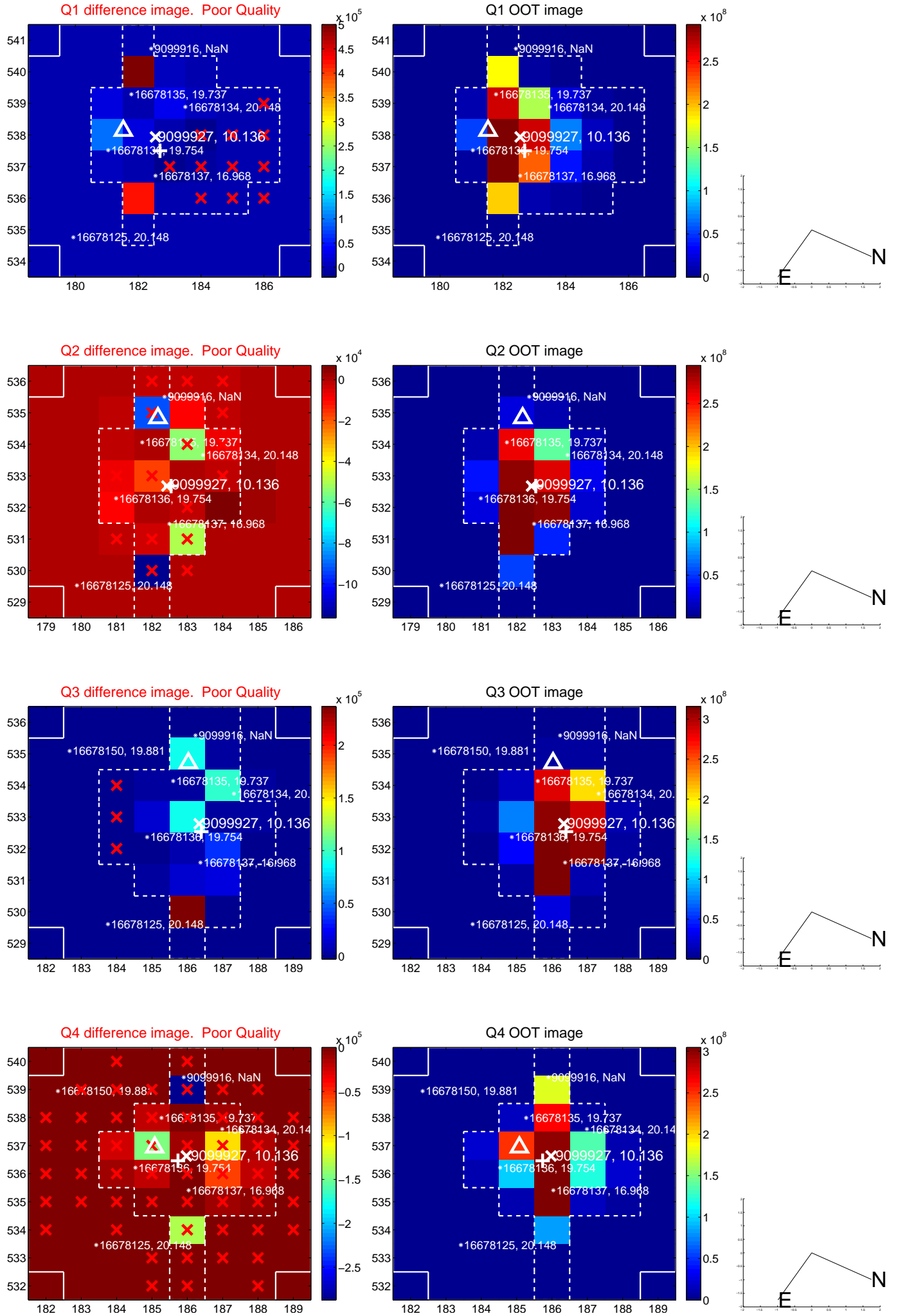
The direct PRF centroid is offset from the target star catalog position by about 1.70 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.971 ± 1.135	2.62	1.154 ± 1.207	2.738 ± 0.873
PRF-fit source offset from KIC position	4.265 ± 1.194	3.57	2.527 ± 1.106	3.435 ± 0.860
photometric centroid source offset	0.50 ± 0.77	0.66	-0.50 ± 0.77	-0.02 ± 0.69

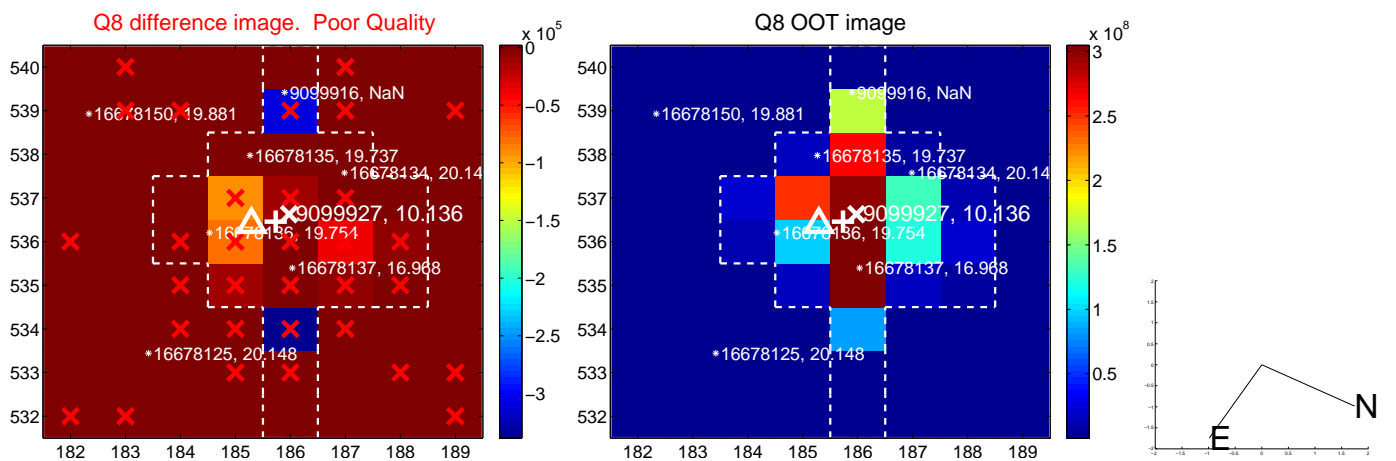
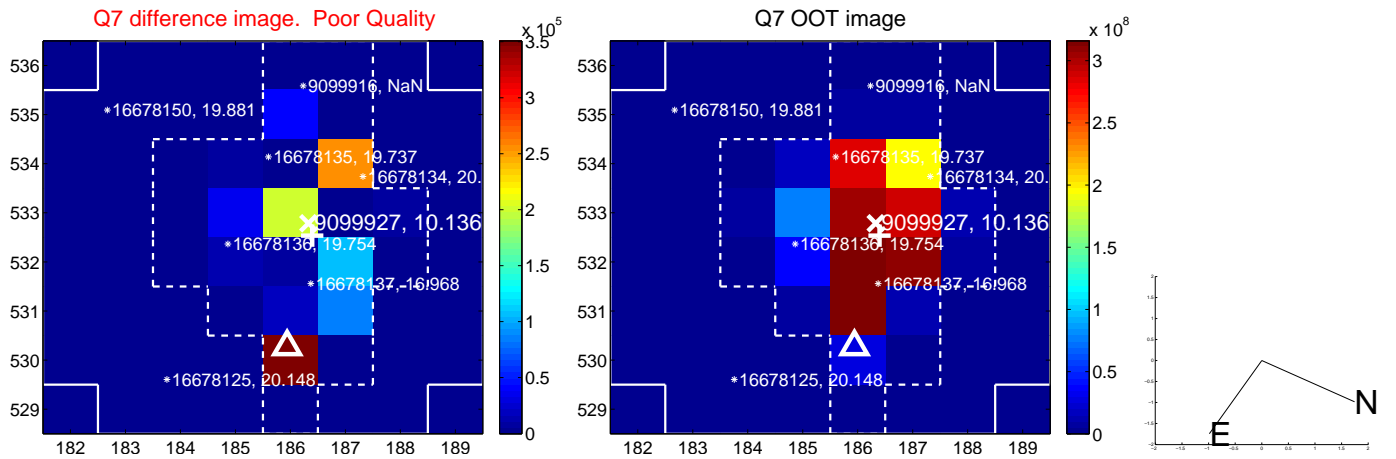
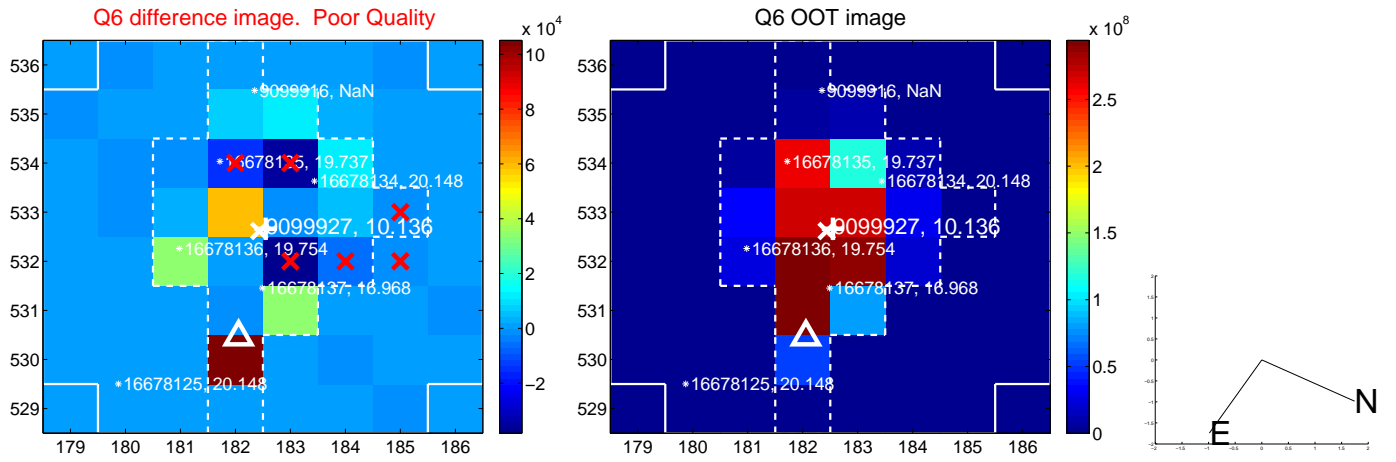
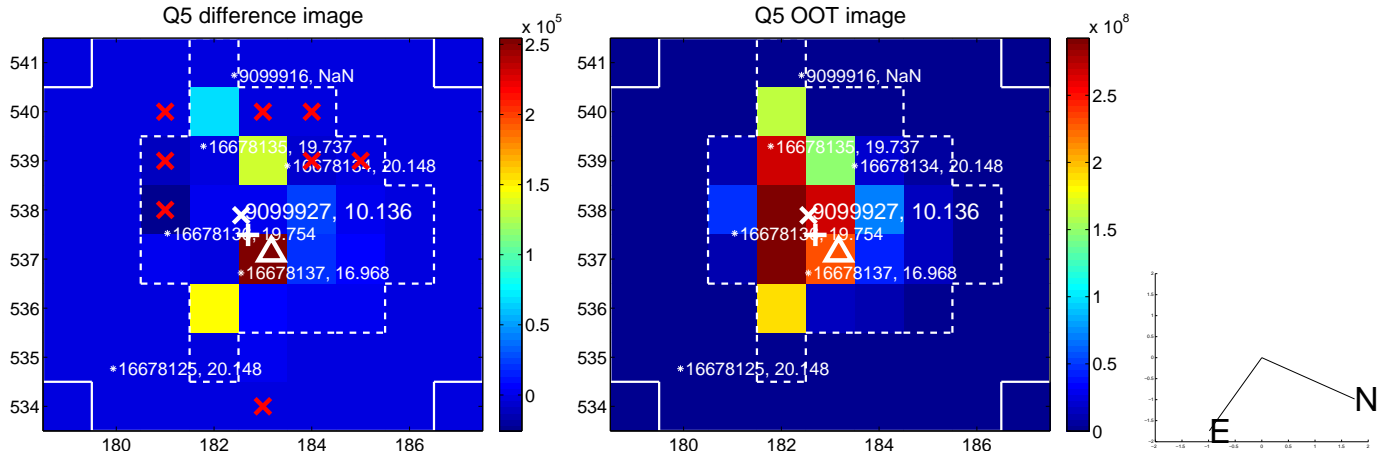


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

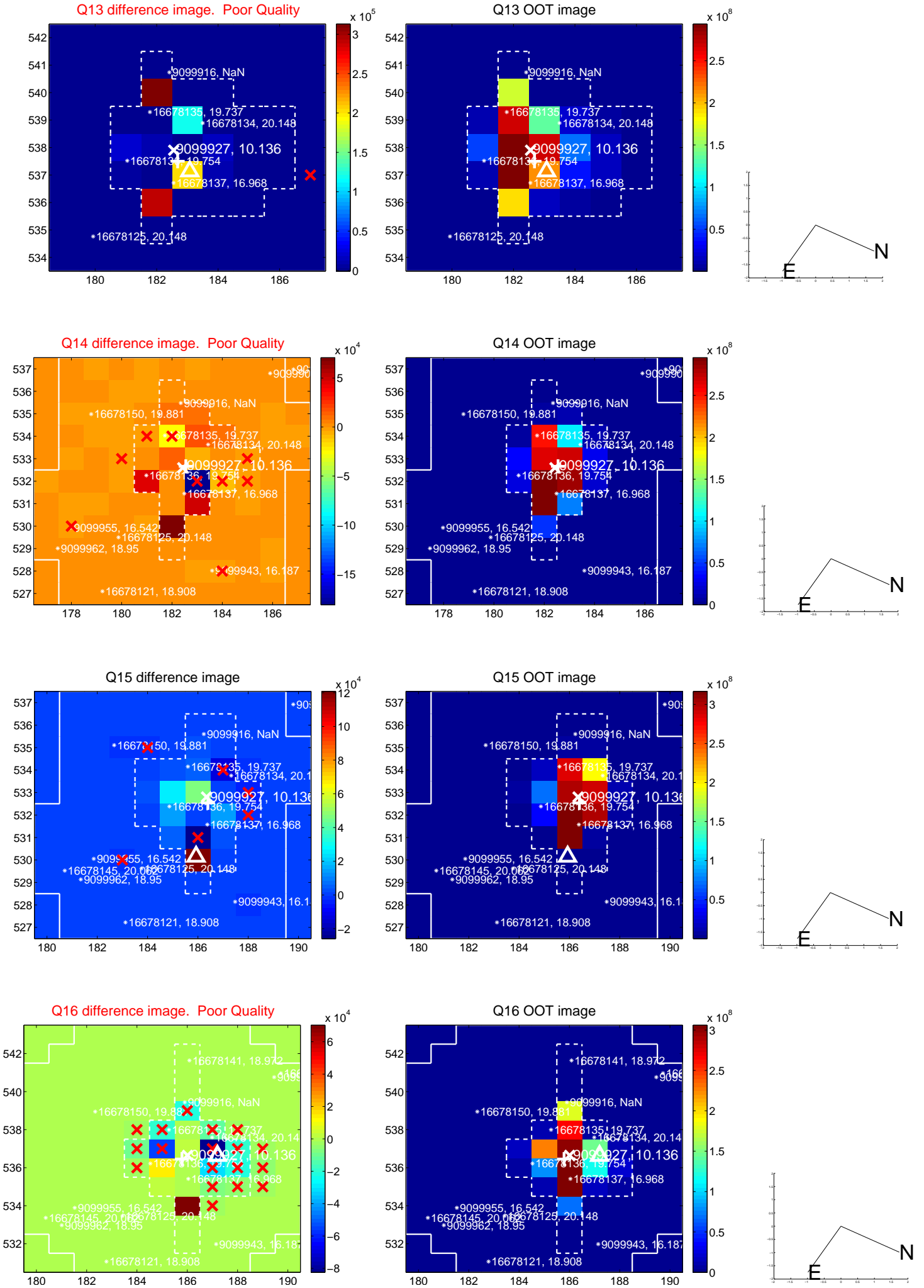
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



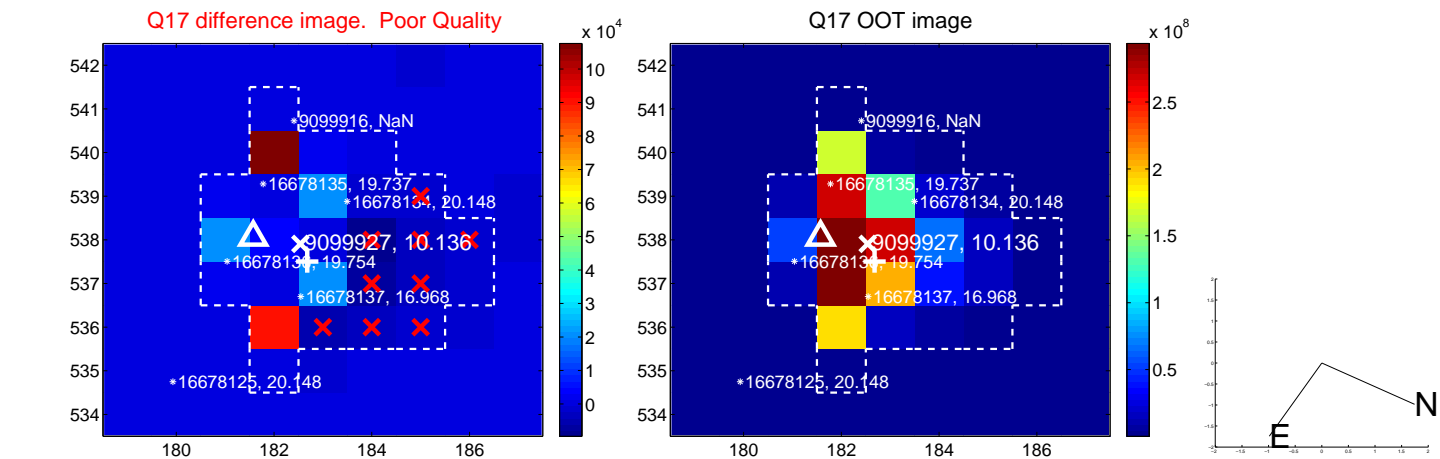
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



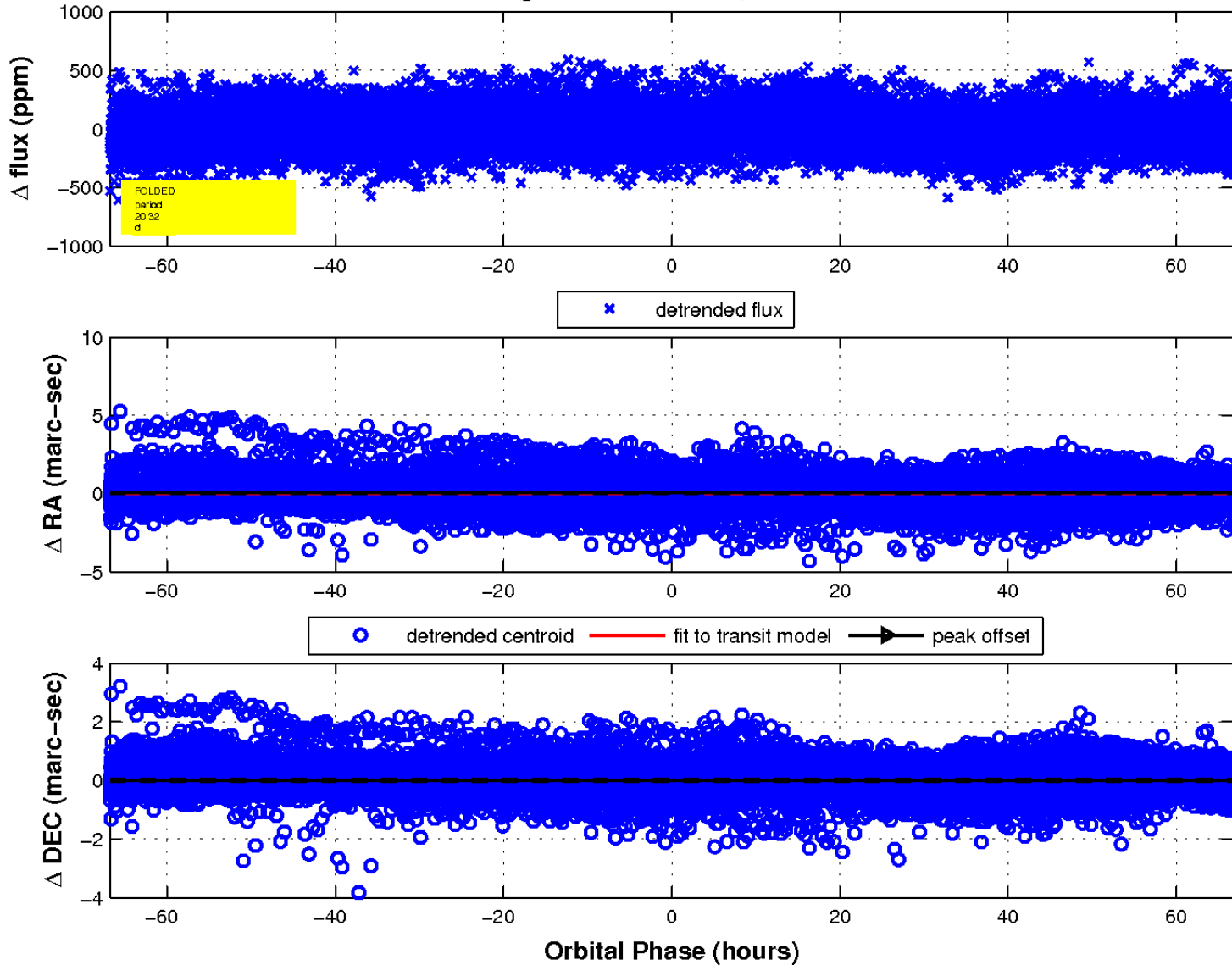
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



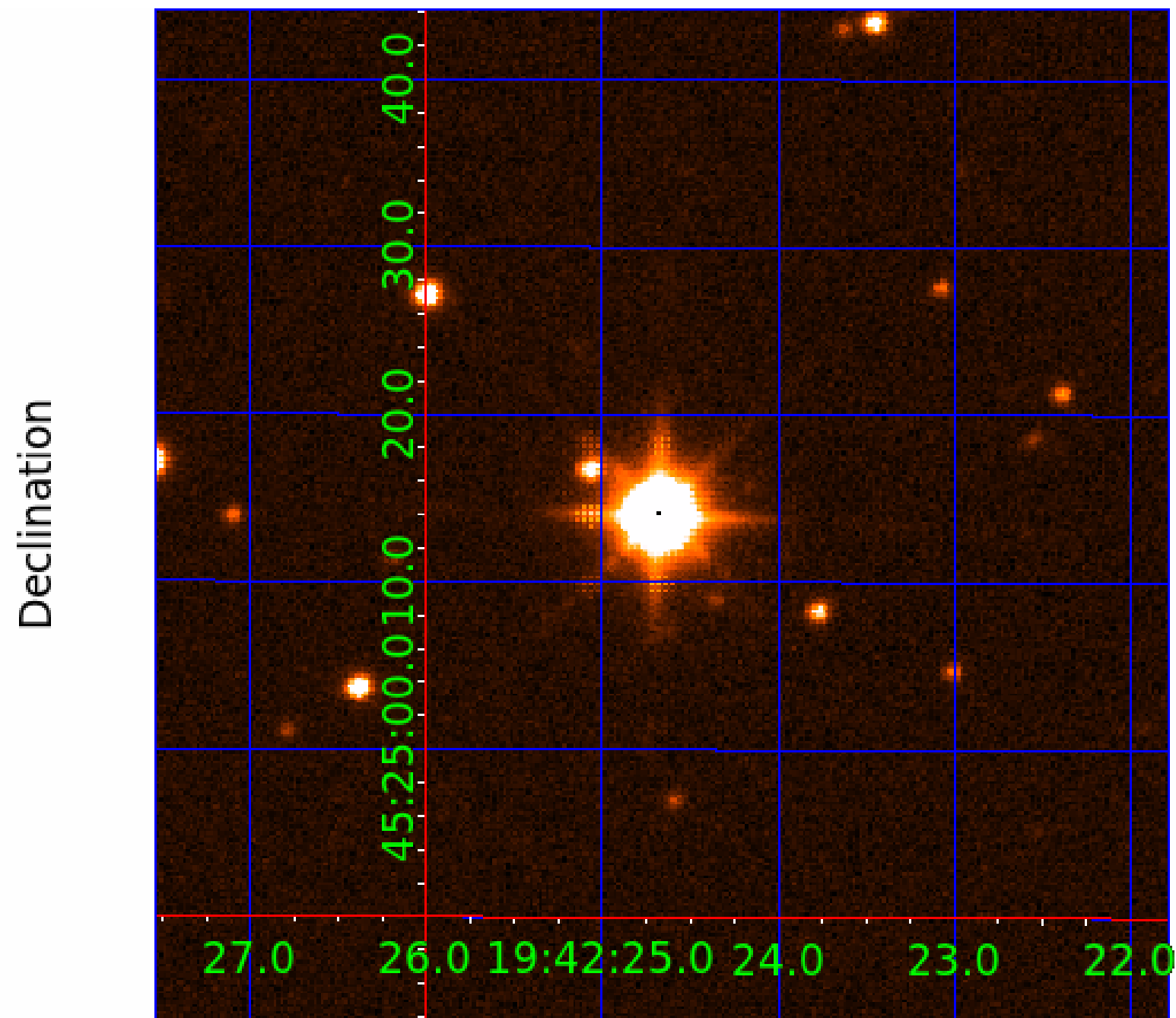
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 3 of 5



UKIRT Image



KIC 009099927

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
009099927-01	OBS	No	2.755361	133.864053	19.1	14.513	8.9	7.2	2.58	6837	1.34	7078.97
009099927-02	OBS	No	237.856942	363.625022	149.4	15.485	10.6	4.7	2.58	6837	3.40	18.55
009099927-03	OBS	No	20.324537	134.048496	45.8	22.262	10.1	4.7	2.58	6837	2.00	493.00
009099927-04	OBS	No	126.535257	197.832532	190.1	30.693	16.9	6.7	2.58	6837	4.03	43.05
009099927-05	OBS	No	103.799709	205.409690	205.0	2.830	8.0	8.6	2.58	6837	4.45	56.05

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009099927-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
009099927-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009099927-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
009099927-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
009099927-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

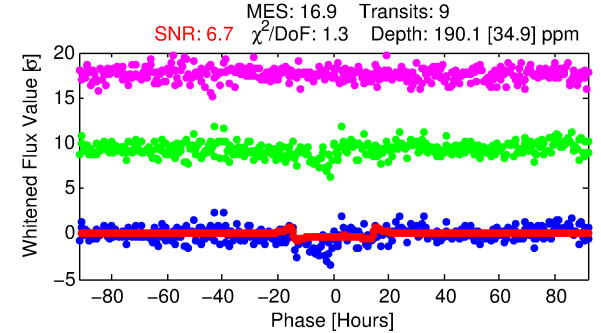
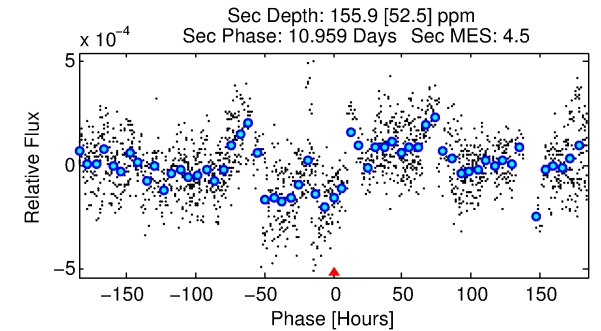
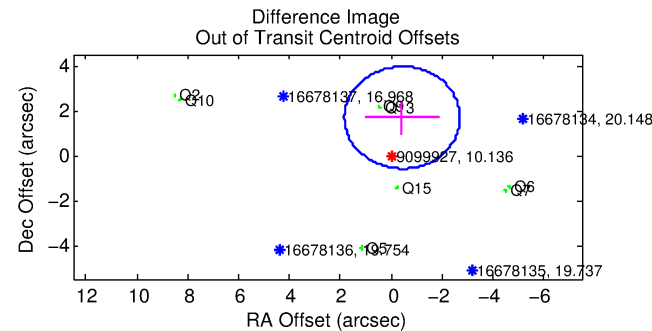
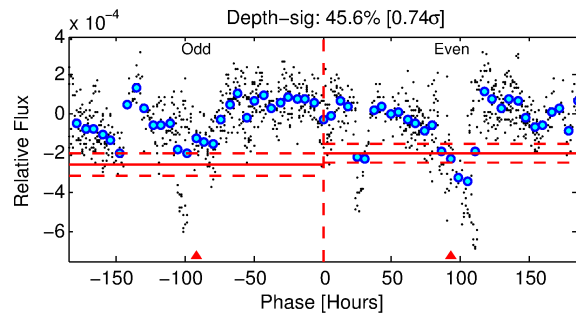
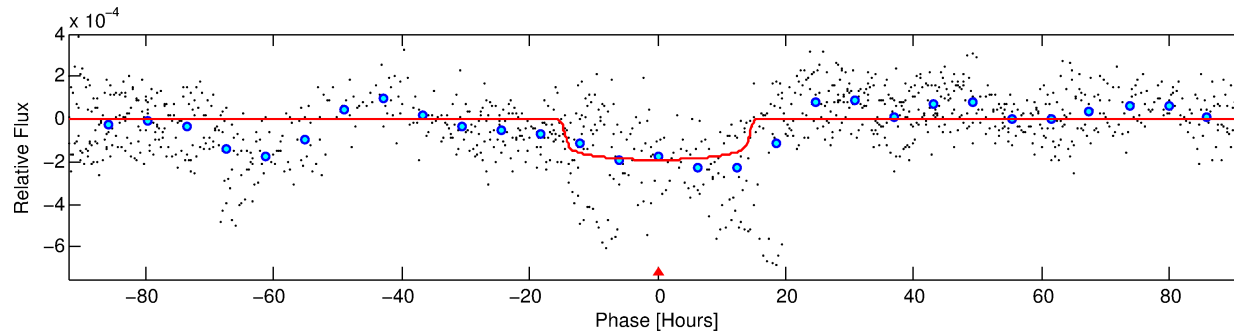
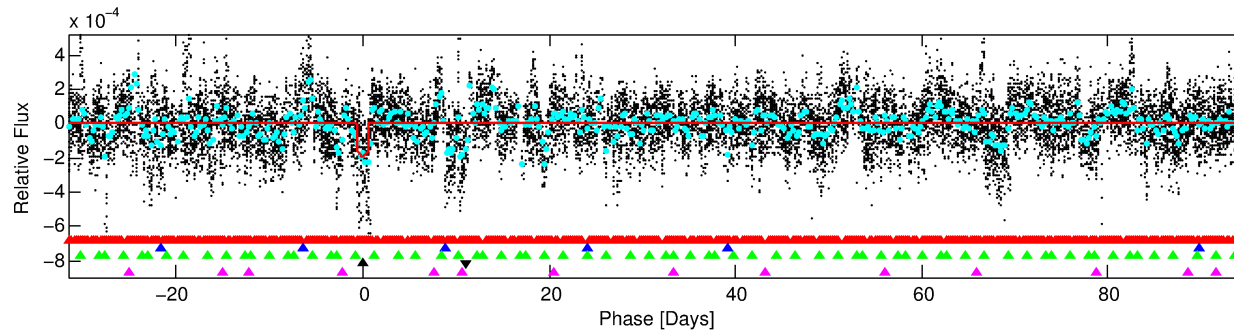
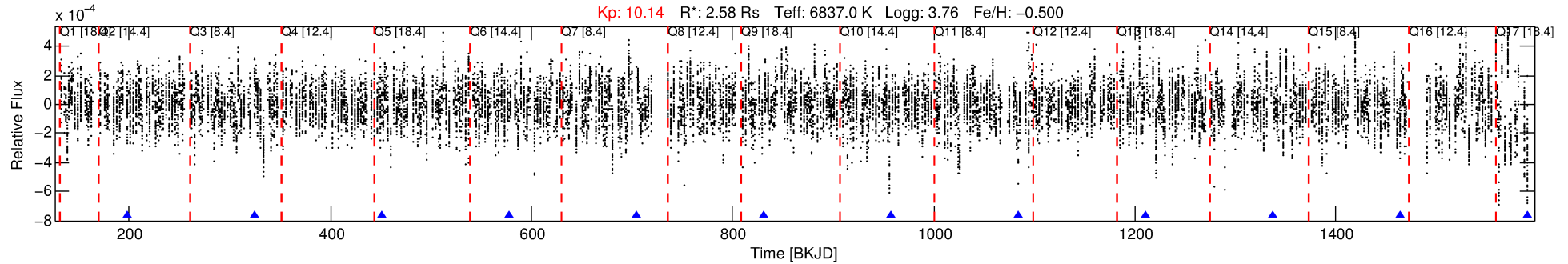
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009099927-04

No Significant Match Found

DV One-Page Summary

KIC: 9099927 Candidate: 4 of 5 Period: 126.535 d



DV Fit Results:

Period = 126.53526 [0.00326] d
Epoch = 197.8325 [0.0209] BKJD
 R_p/R^* = 0.0143 [0.0015]
 a/R^* = 16.80 [4.28]
 b = 0.86 [0.08]
 Seff = 43.05 [24.32]
 T_{eq} = 653 [92] K
 R_p = 4.03 [1.58] R_e
 a = 0.5491 [0.1933] AU
 Ag = 1592.33 [1085.59] [1.47 σ]
 T_{eff} = 6379 [666] K [8.52 σ]

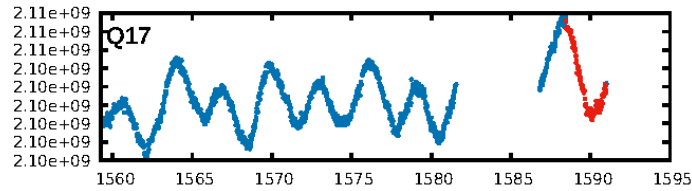
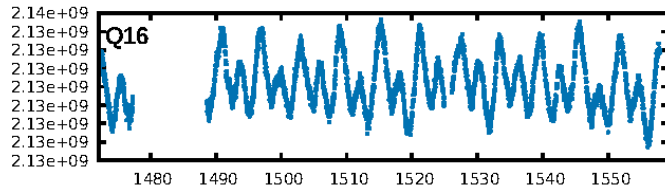
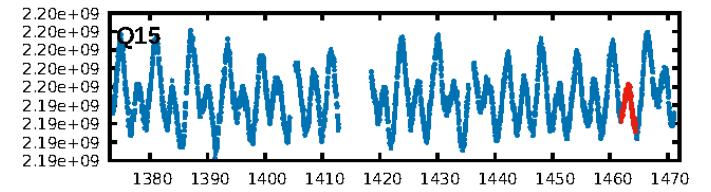
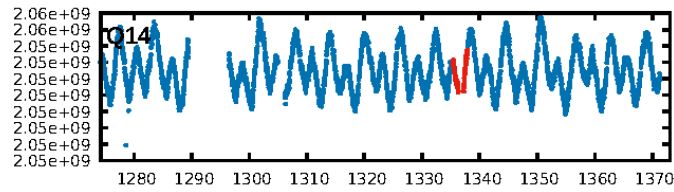
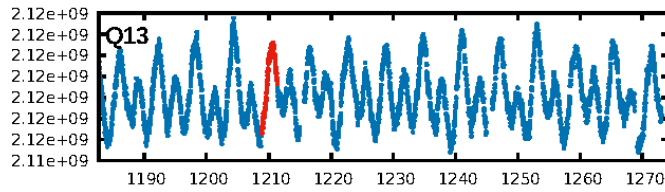
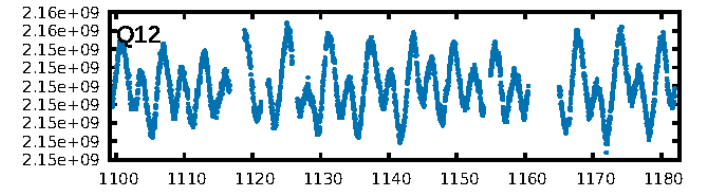
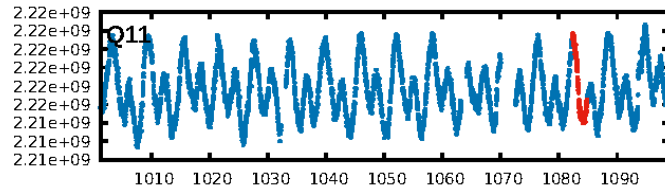
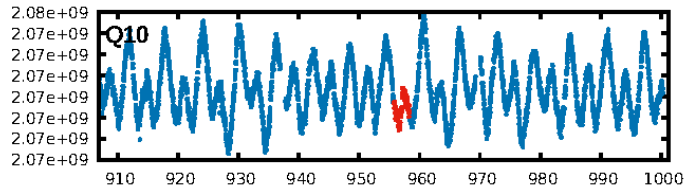
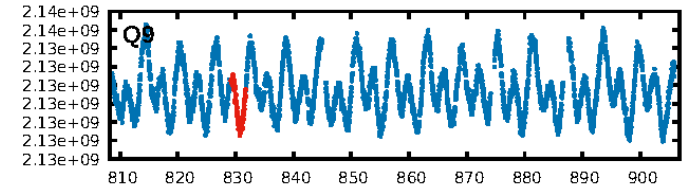
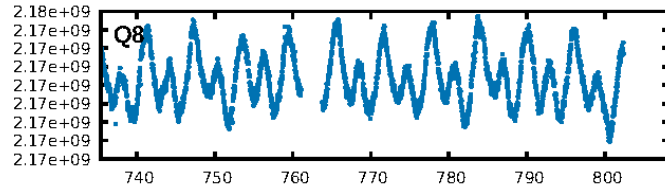
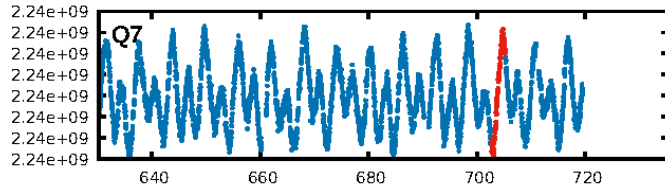
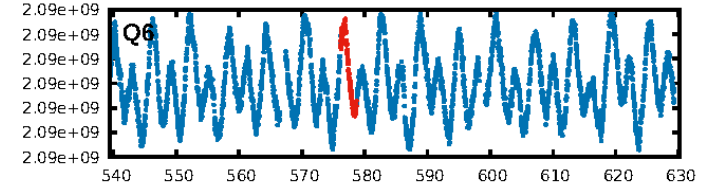
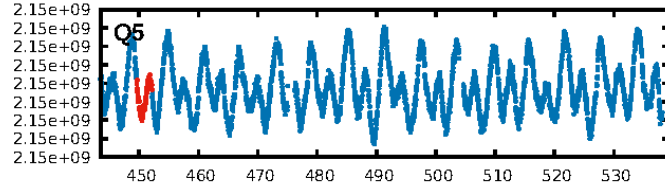
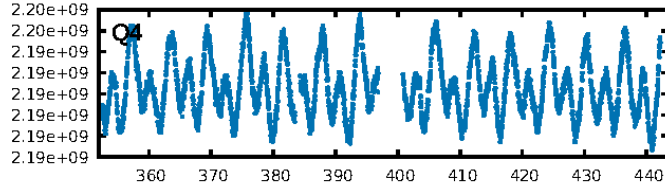
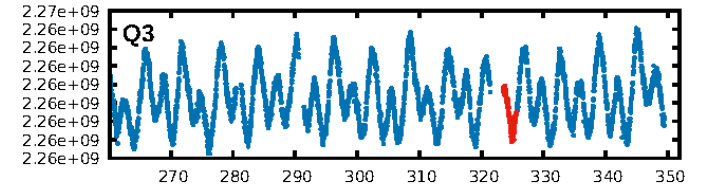
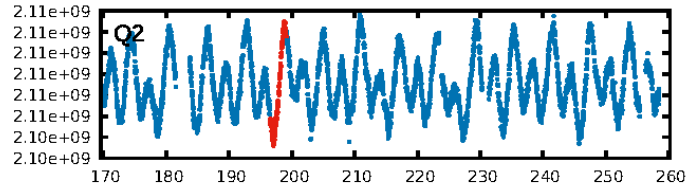
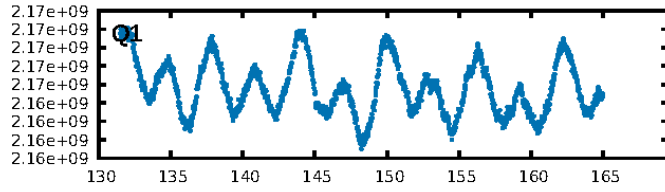
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [17.70 σ]
LongPeriod-sig: 100.0% [77.72 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.63e-33
RollingBand-fgm: 1.00 [8/8]
GhostDiagnostic-chr: N/A
Centroid-sig: 21.2%
Centroid-so: 0.286 arcsec [0.81 σ]
OotOffset-rm: 1.737 arcsec [2.29 σ]
OotOffset-st: 3/2/0/3 [8]
KicOffset-rm: 2.452 arcsec [2.21 σ]
KicOffset-st: 3/2/0/3 [8]
DiffImageQuality-fgm: 0.00 [0/8]
DiffImageOverlap-fno: 0.00 [0/8]

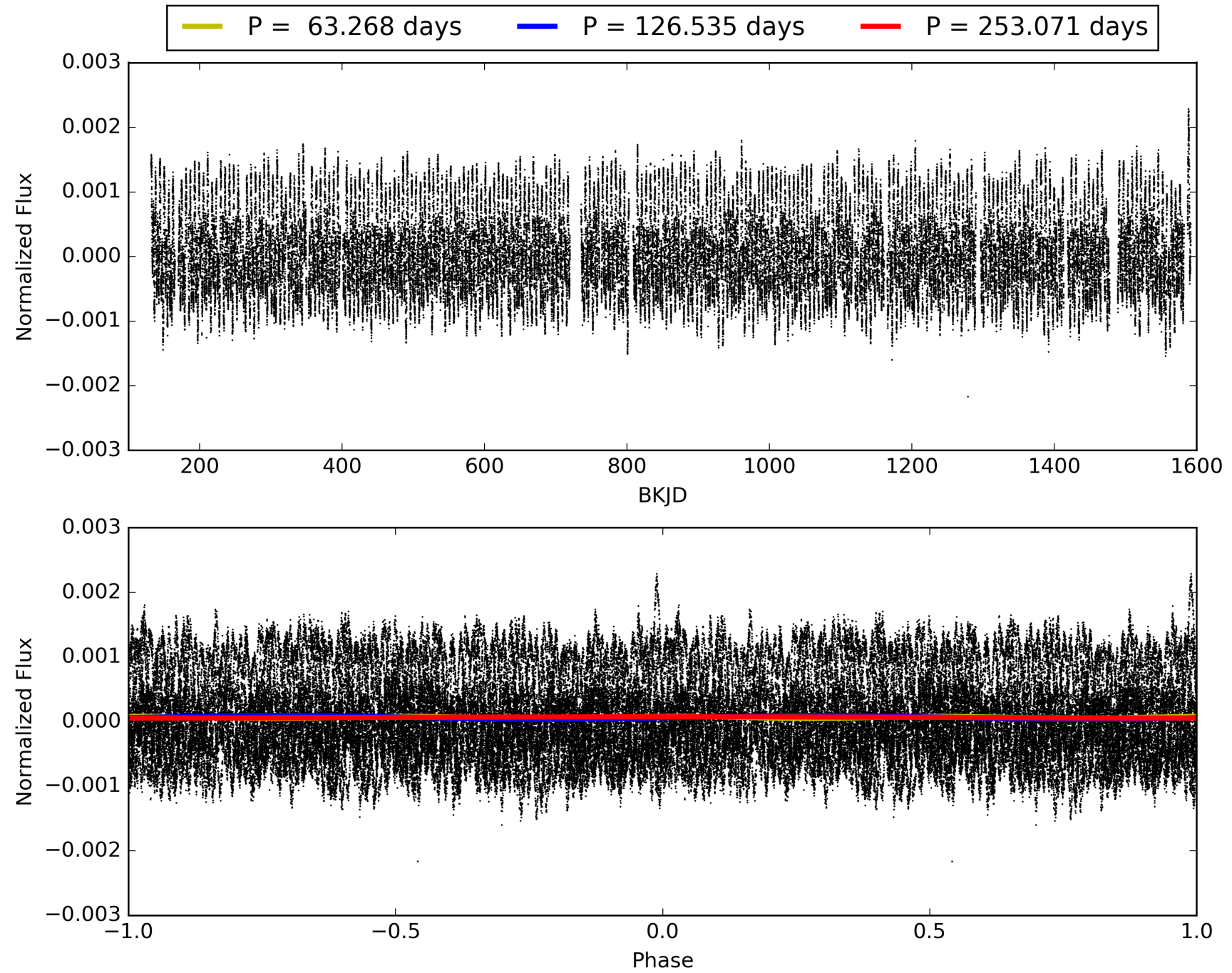
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:52:03 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009099927-04, PDC Light Curves

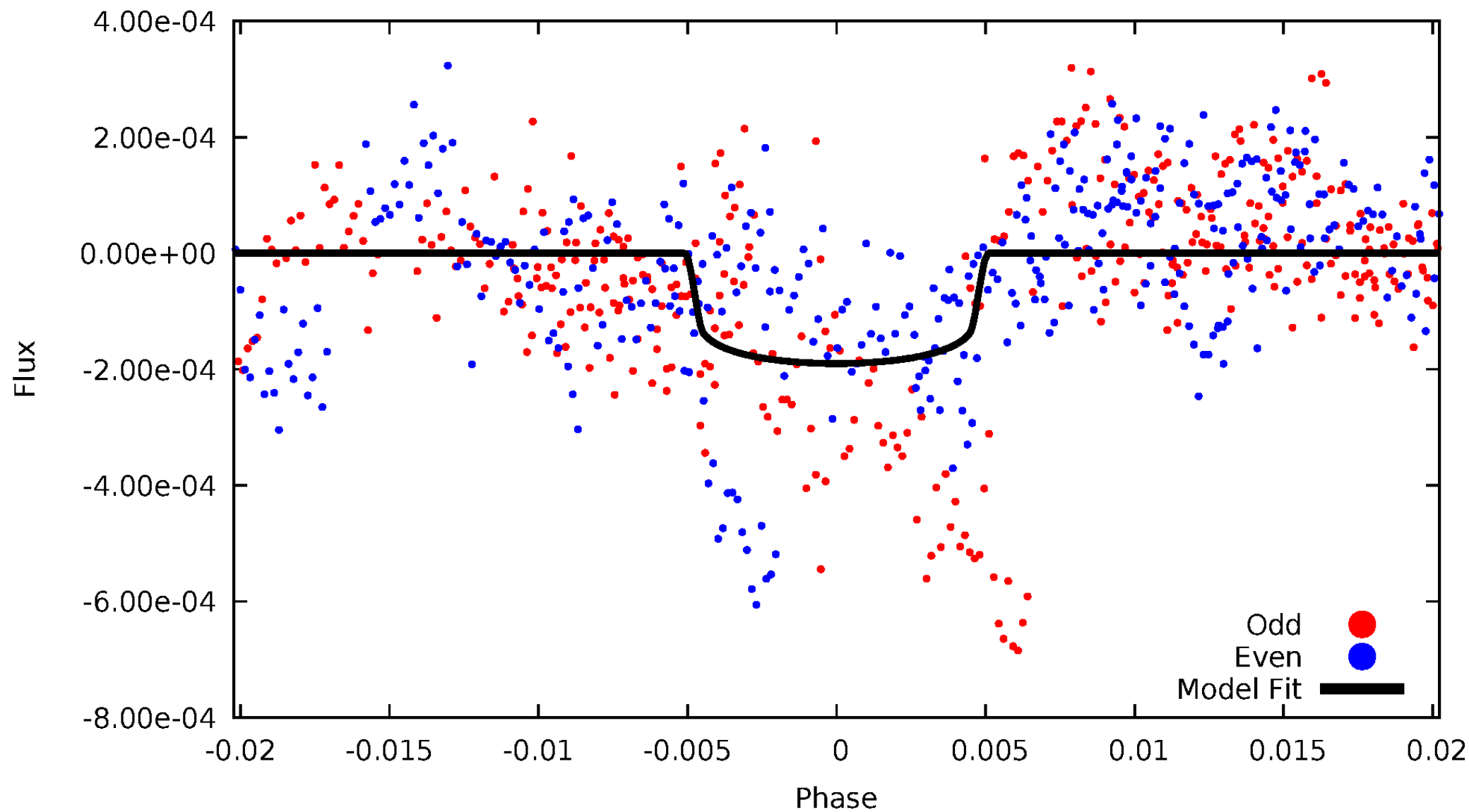


TCE 009099927-04



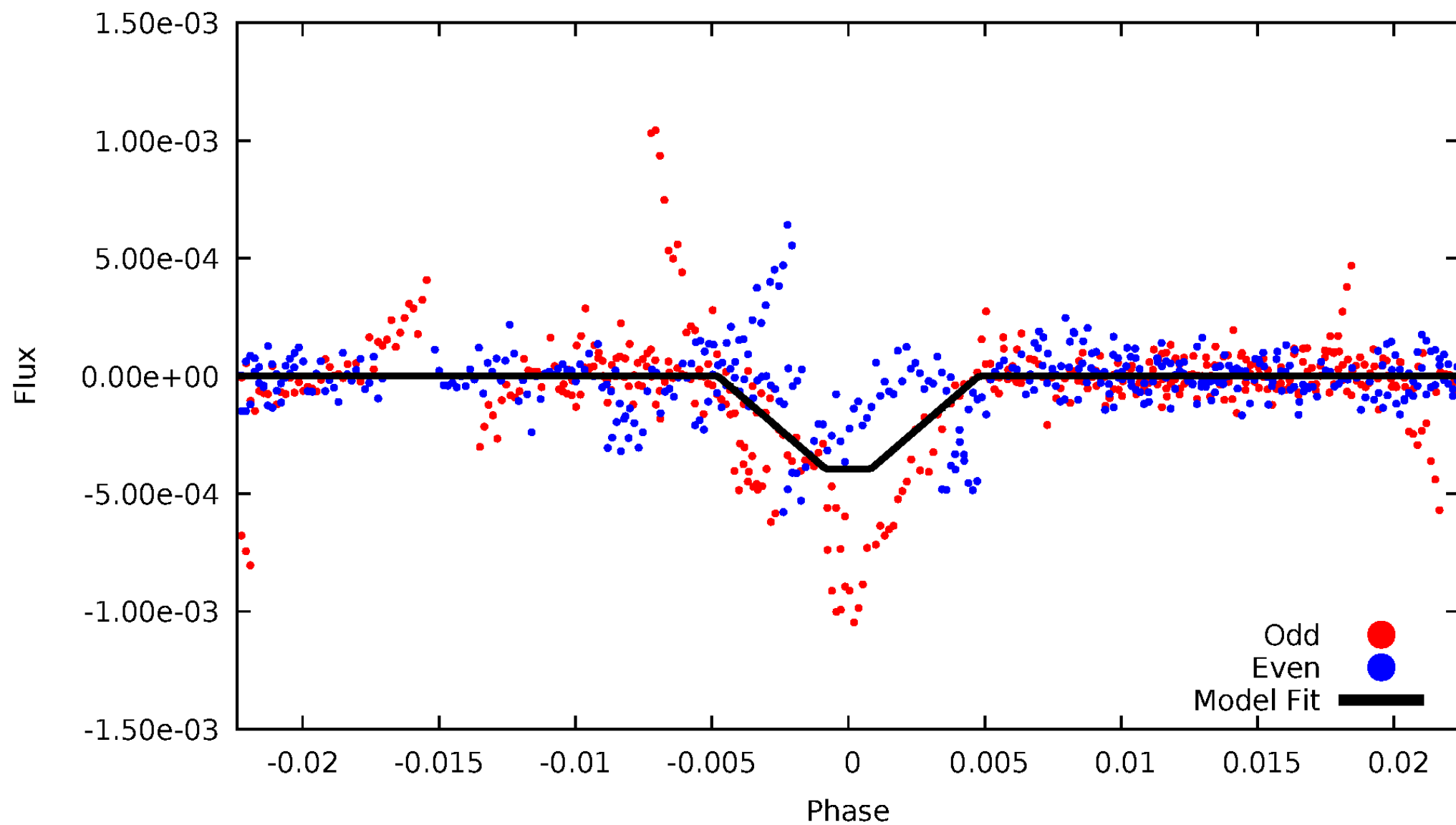
DV Odd/Even

TCE 009099927-04



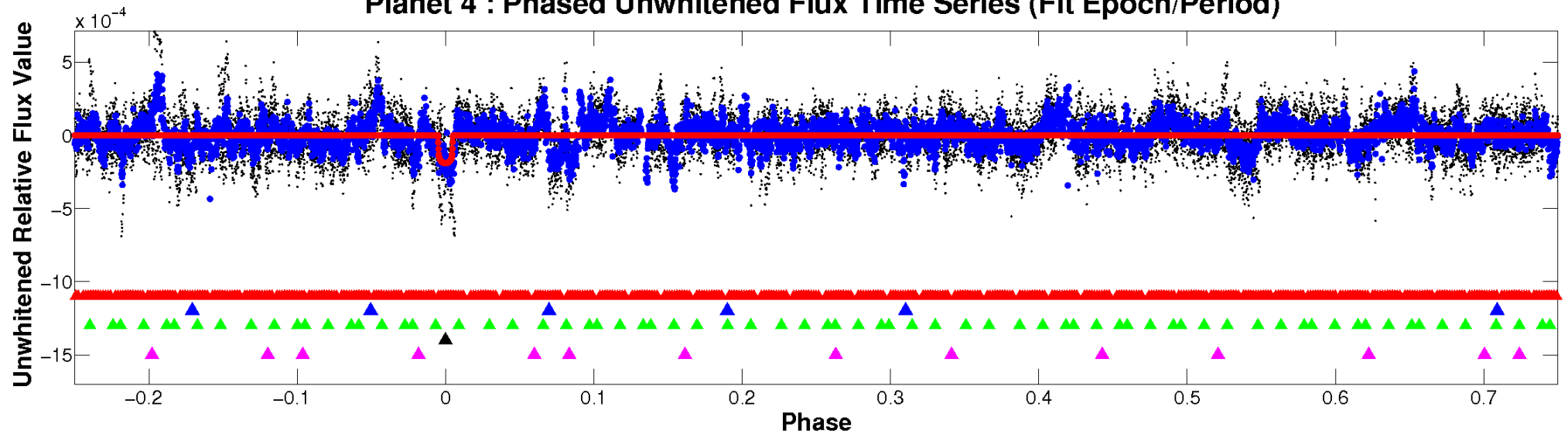
ALT Odd/Even

TCE 009099927-04

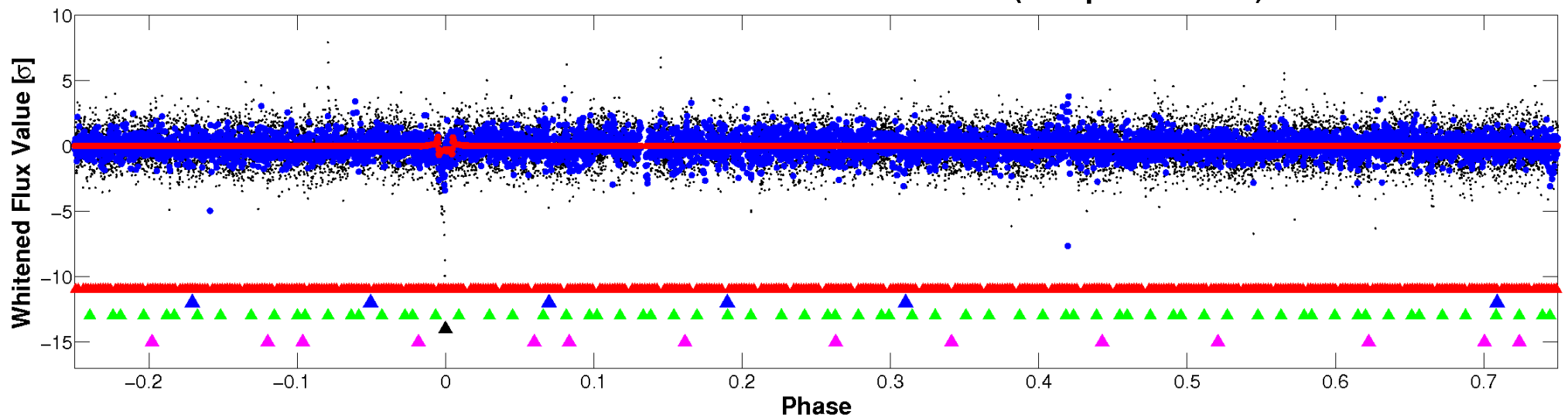


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

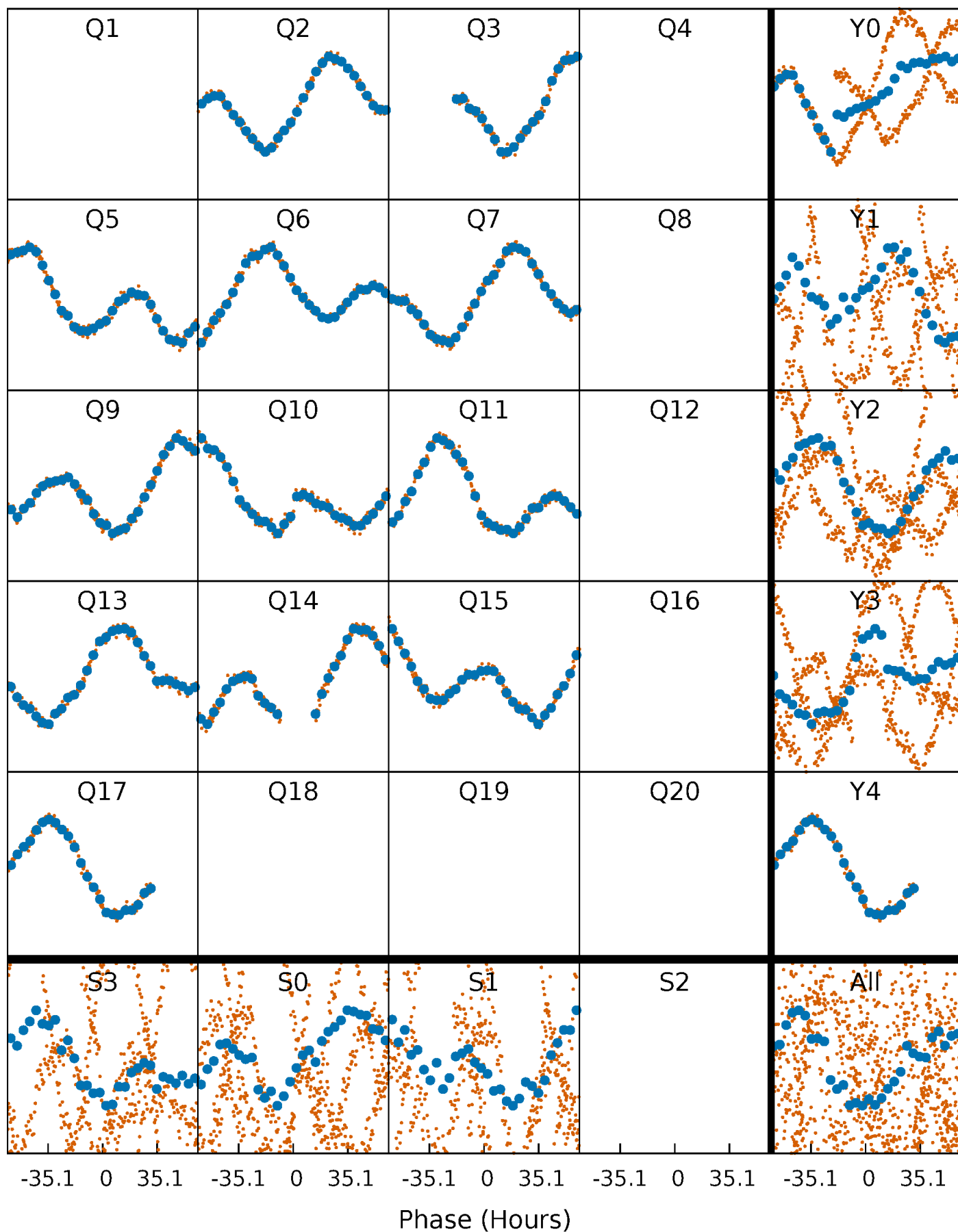


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



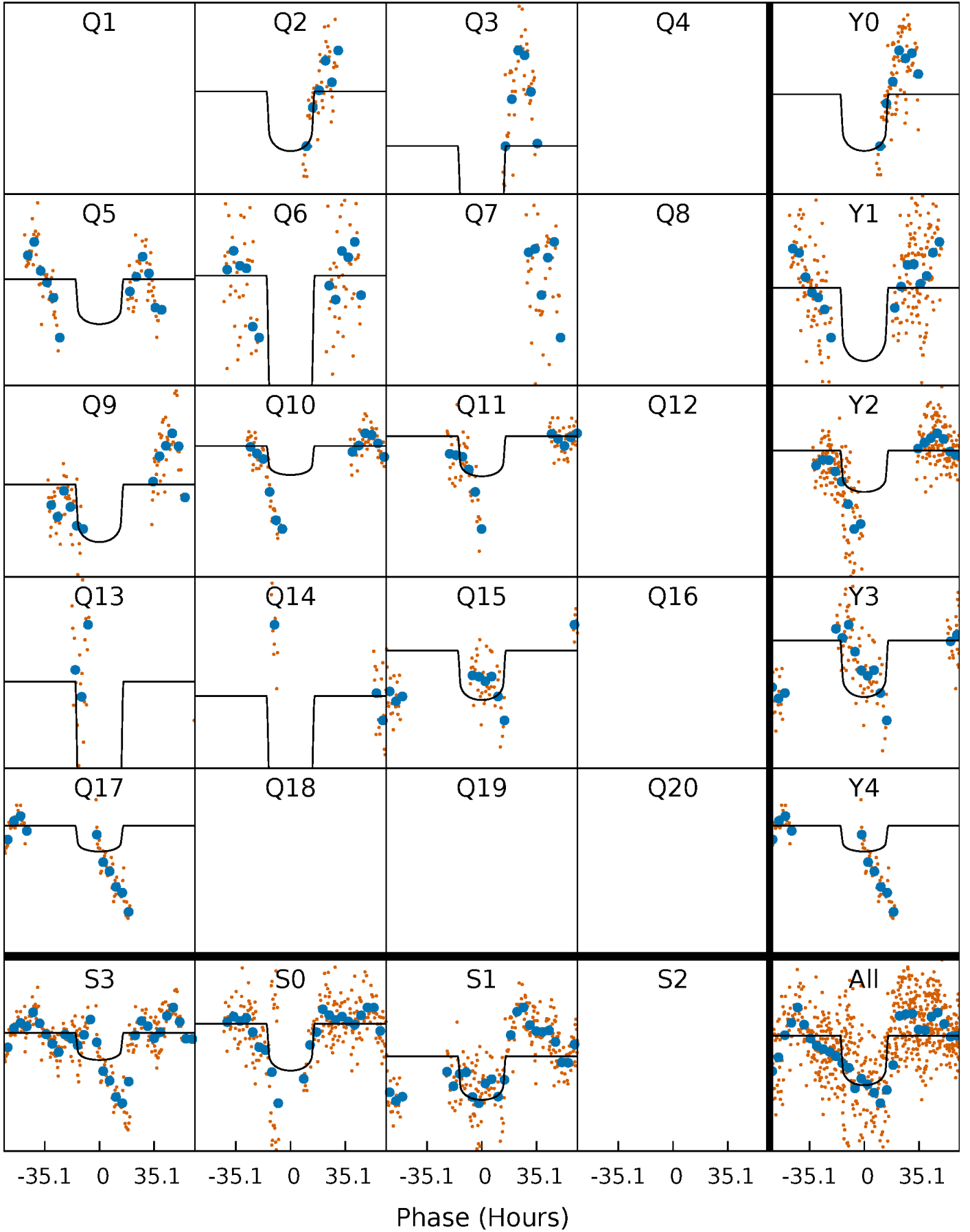
PDC Quarter-Phased Transit Curves

TCE 009099927-04 $P=126.535258$ Days $T_0=197.832532$ (BKJD)



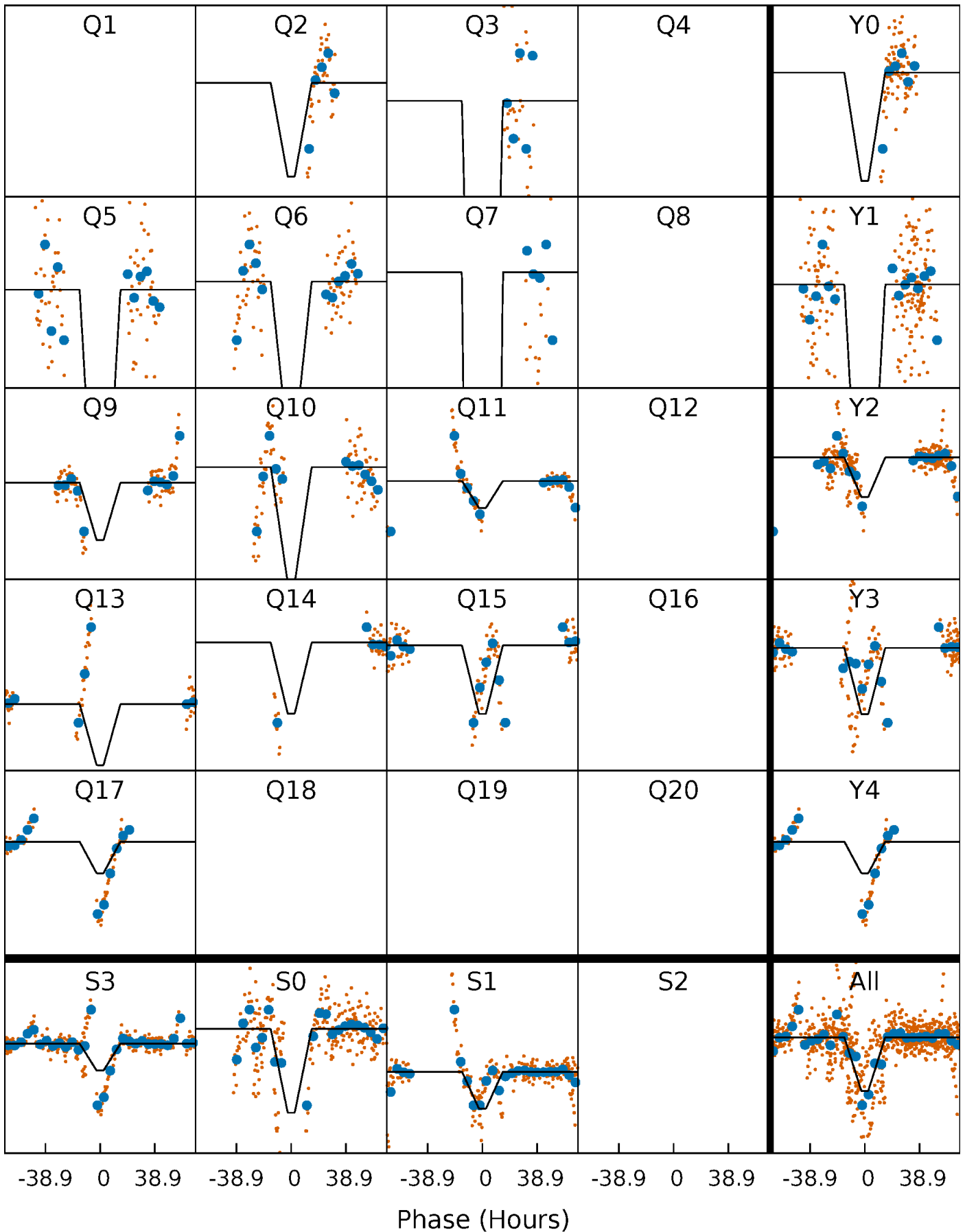
DV Quarter-Phased Transit Curves

TCE 009099927-04 P=126.535258 Days $T_0=197.832532$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

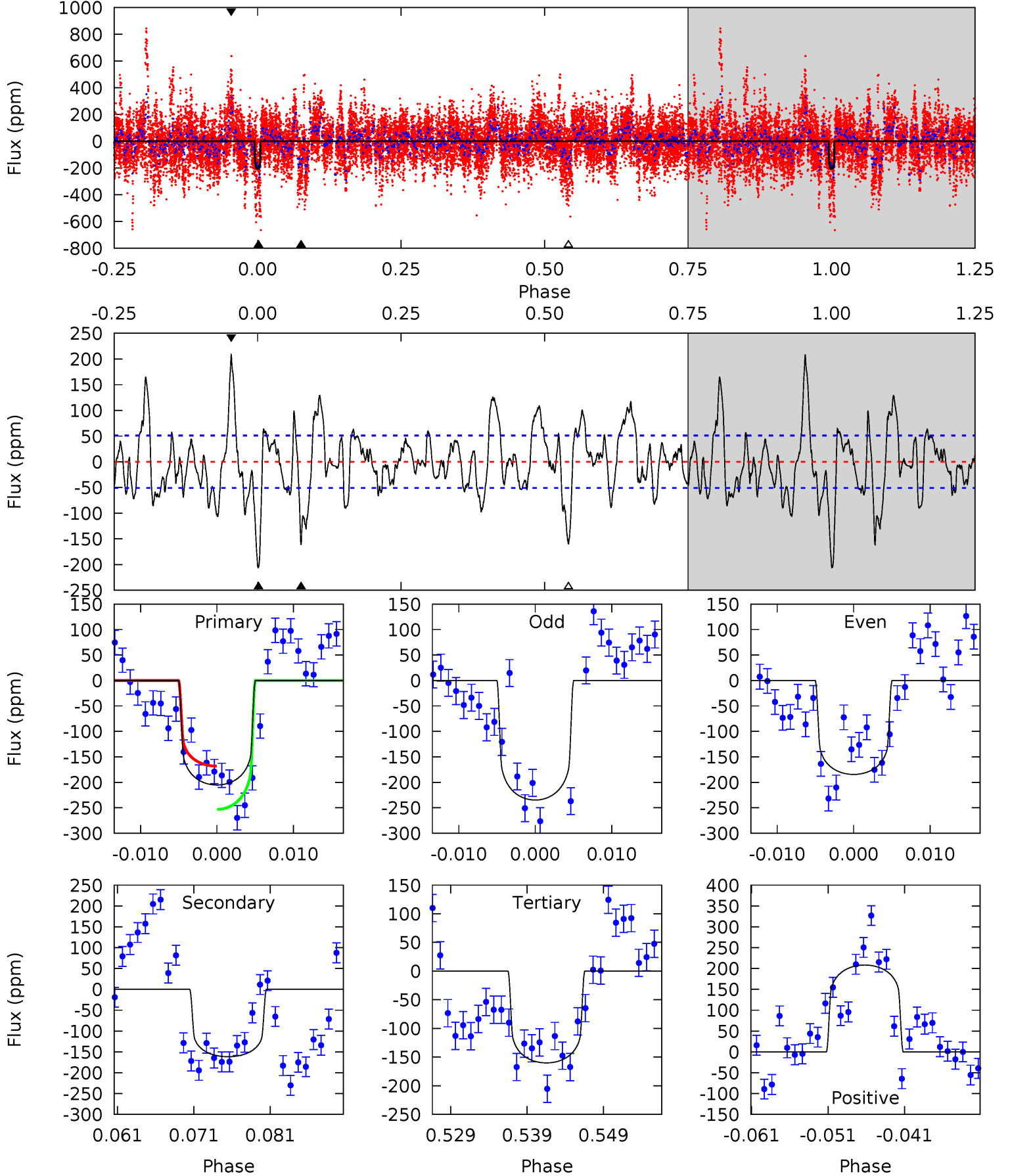
TCE 009099927-04 P=126.545037 Days $T_0=197.733176$ (BKJD)



DV Model-Shift Uniqueness Test

009099927-04, P = 126.535258 Days, E = 71.297274 Days

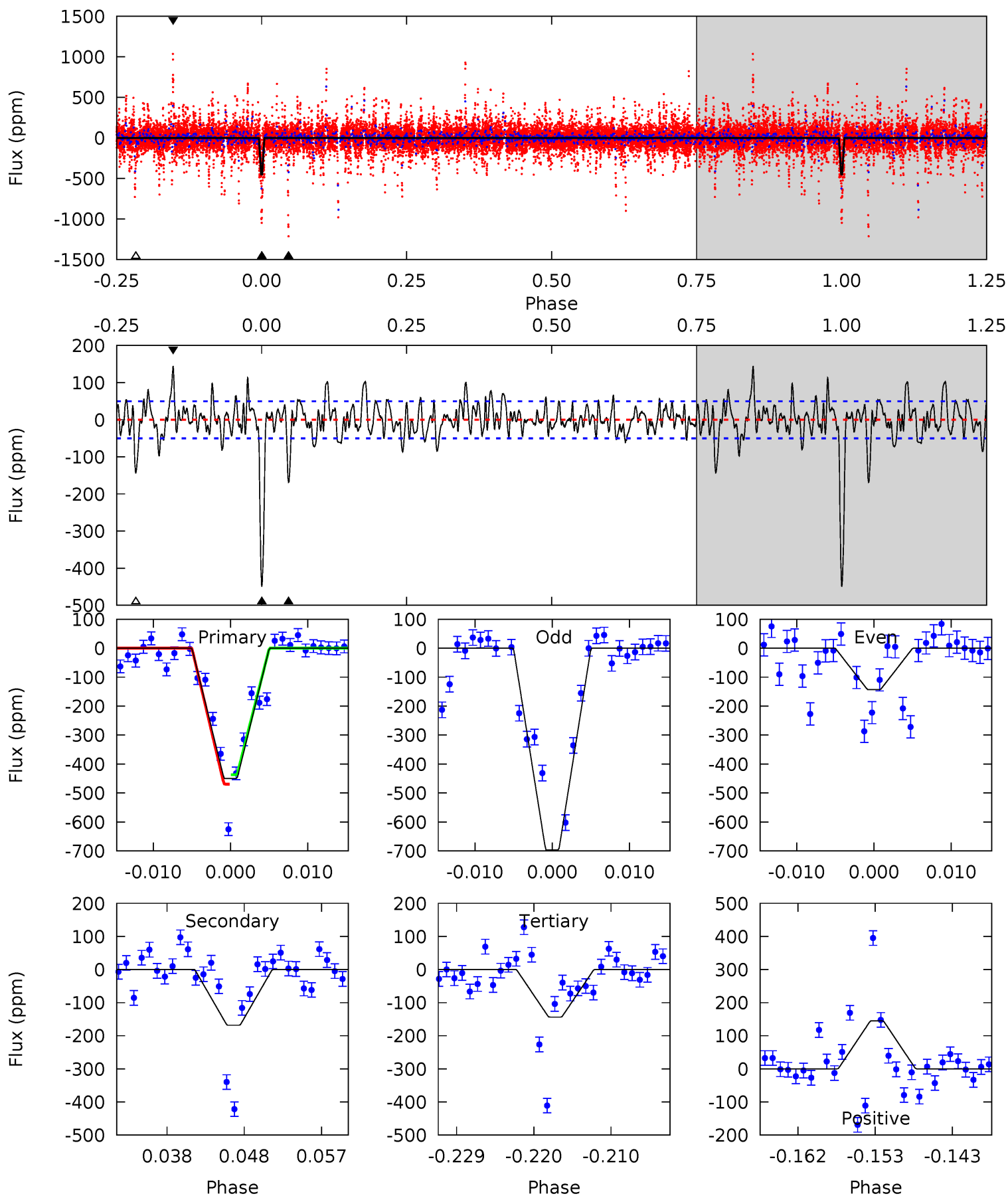
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.2	15.9	15.8	20.5	5.02	2.57	5.38	4.44	-0.30	0.15	-4.60	2.45	1.01	0.50	4.17



Alt Model-Shift Uniqueness Test

009099927-04, P = 126.545037 Days, E = 71.188139 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
45.4	17.0	14.5	14.6	5.04	2.59	3.25	30.9	30.8	2.48	2.37	24.0	0.99	0.24	1.61



Stellar Parameters For KIC 009099927

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6837^{+183}_{-204}	$3.756^{+0.320}_{-0.080}$	$-0.500^{+0.300}_{-0.250}$	$2.575^{+0.417}_{-0.974}$	$1.380^{+0.230}_{-0.276}$	$0.114^{+0.258}_{-0.038}$
	+3%/-3%	+9%/-2%	+60%/-50%	+16%/-38%	+17%/-20%	+226%/-33%
Source	PHO1	FLK73	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009099927-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-162 ± 10	$3.86^{+0.72}_{-0.75}$	893^{+56}_{-84}	6392^{+424}_{-363}	1856^{+907}_{-511}
Alt.	-168 ± 10	$5.40^{+0.81}_{-1.21}$	889^{+53}_{-81}	5519^{+266}_{-232}	993^{+508}_{-234}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

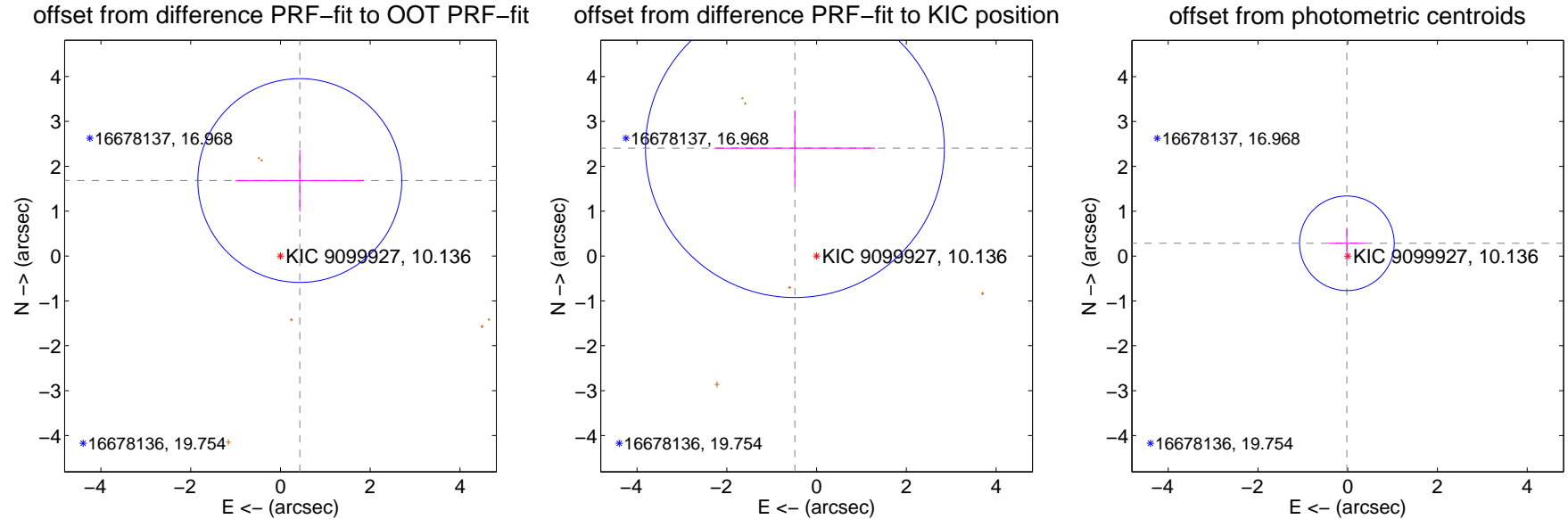
DV Centroid Data

Supplemental centroid analysis for 009099927-04. **Kepler magnitude: 10.14.** Transit SNR 6.70

There are 0 quarters with good PRF difference image offsets

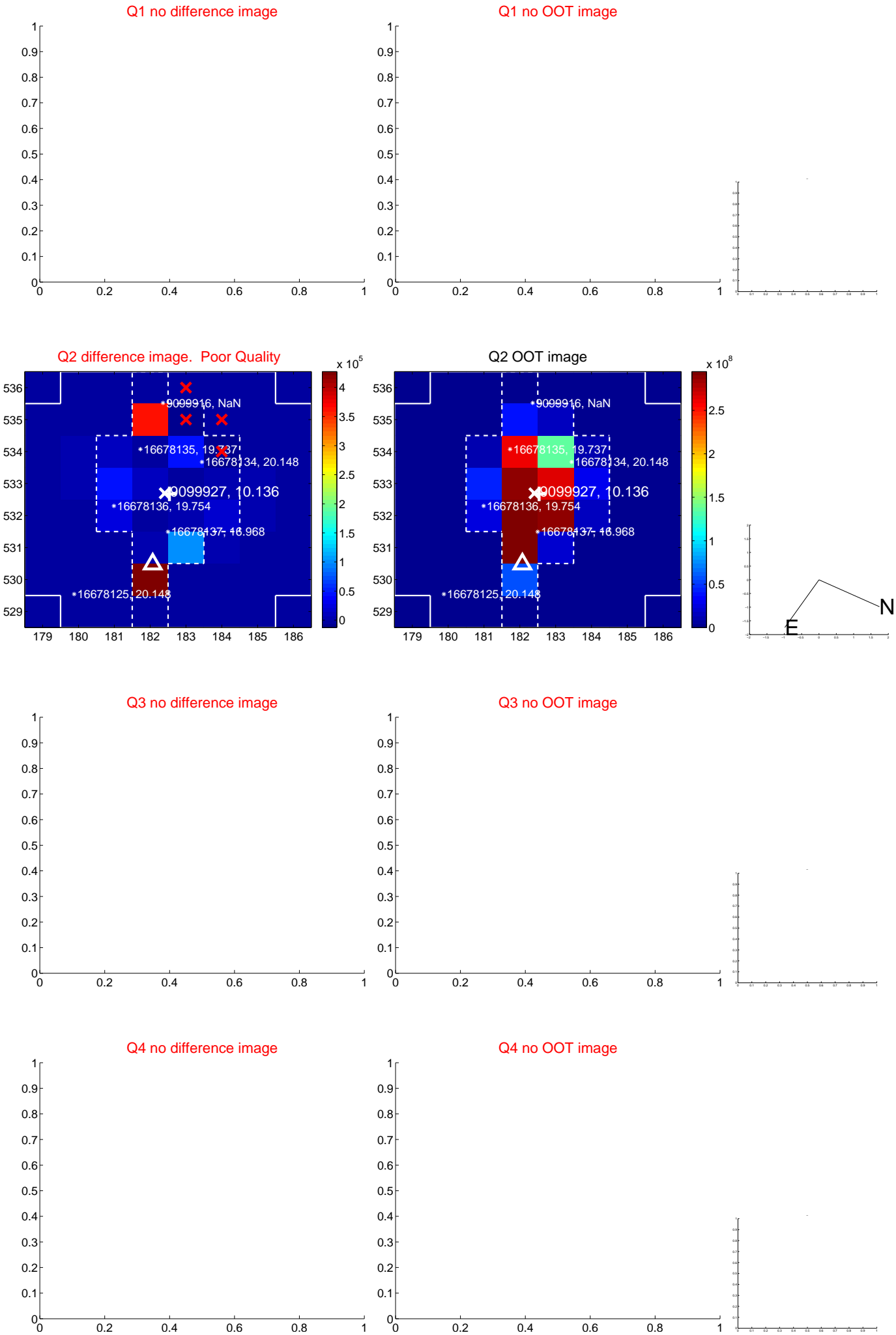
The direct PRF centroid is offset from the target star catalog position by about 1.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.737 ± 0.757	2.29	-0.431 ± 1.429	1.682 ± 0.691
PRF-fit source offset from KIC position	2.452 ± 1.110	2.21	0.483 ± 1.794	2.404 ± 0.846
photometric centroid source offset	0.29 ± 0.35	0.81	0.02 ± 0.41	0.29 ± 0.35

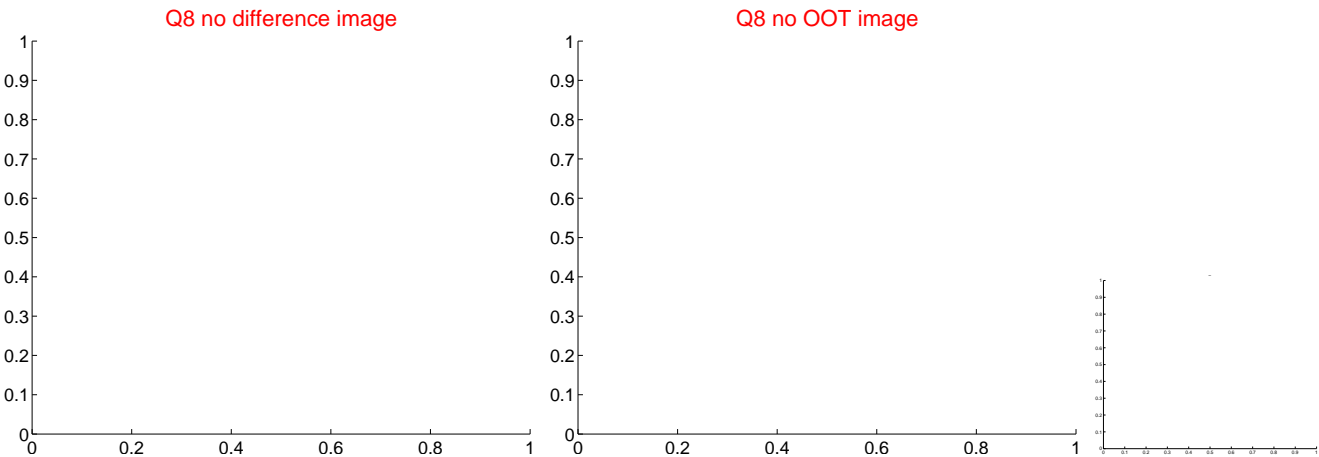
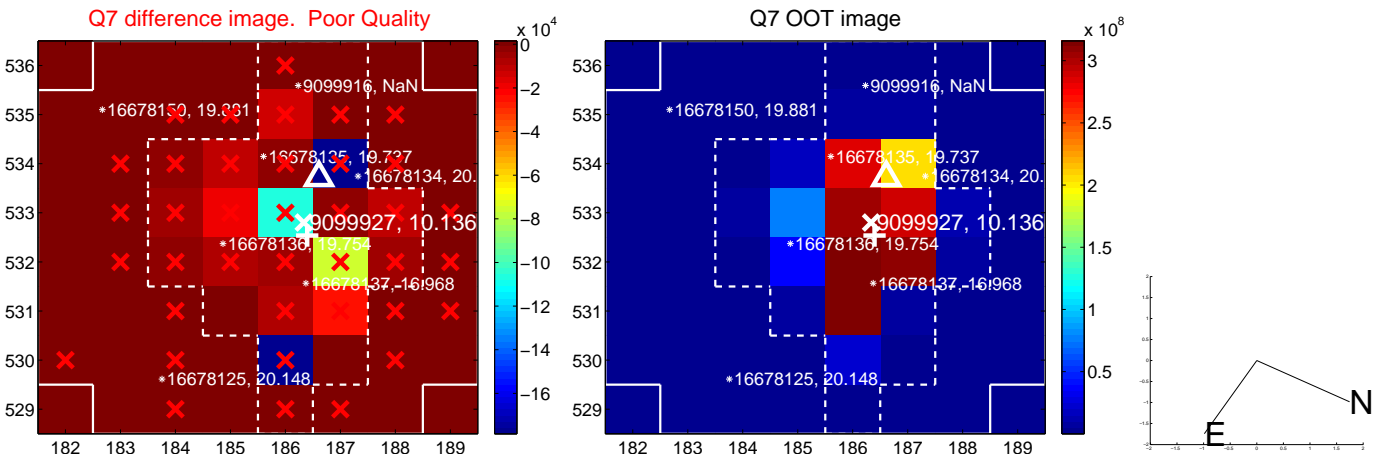
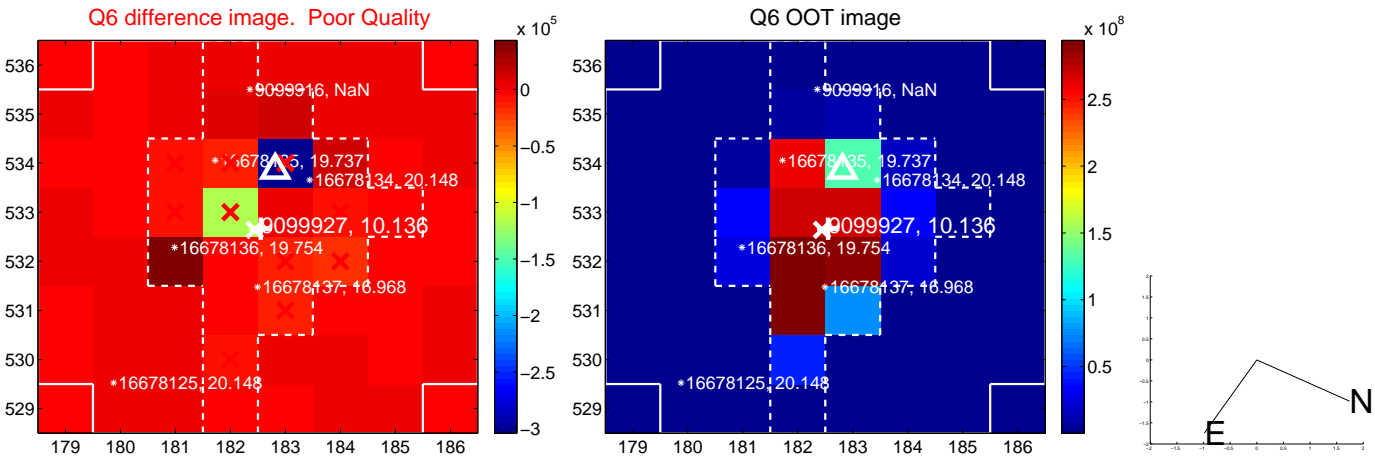
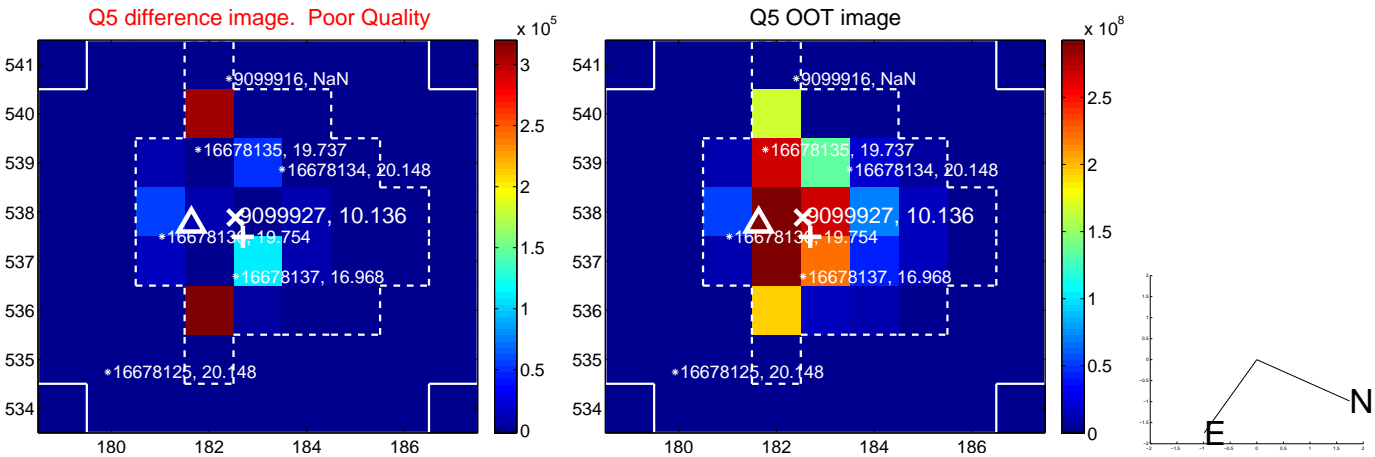


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

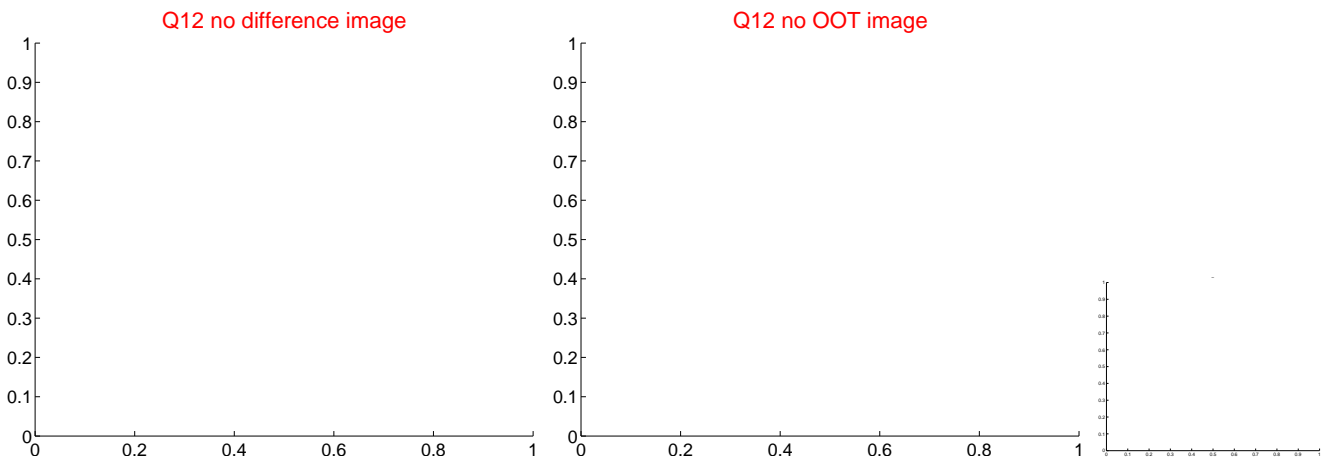
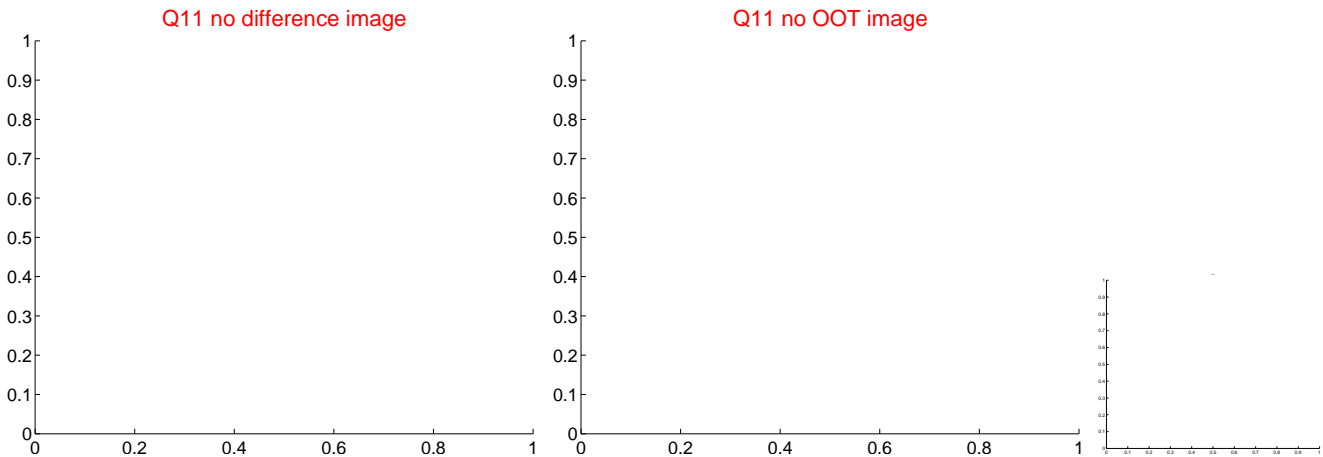
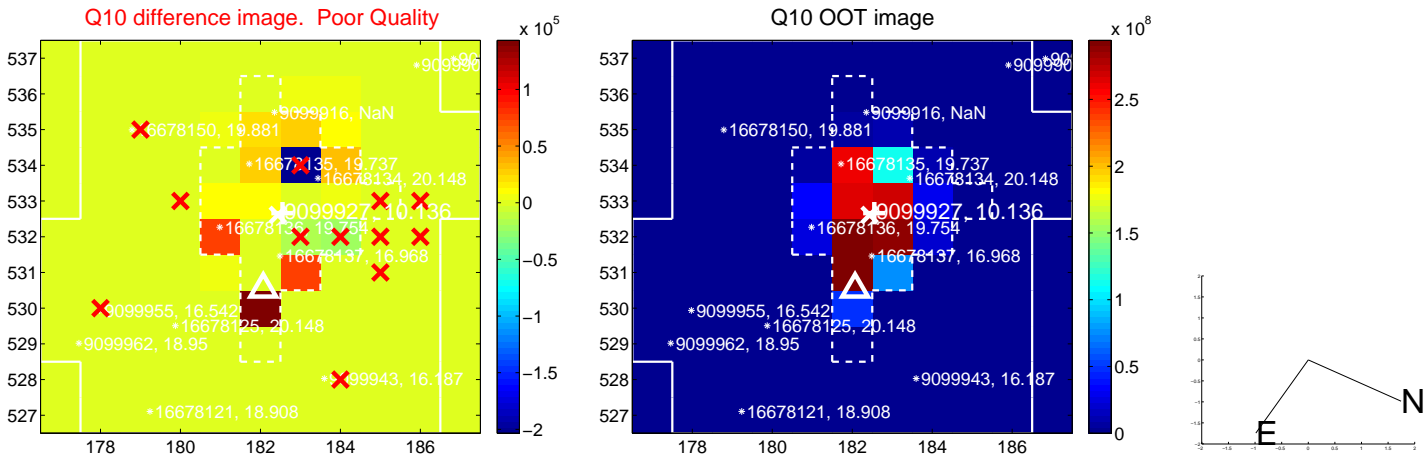
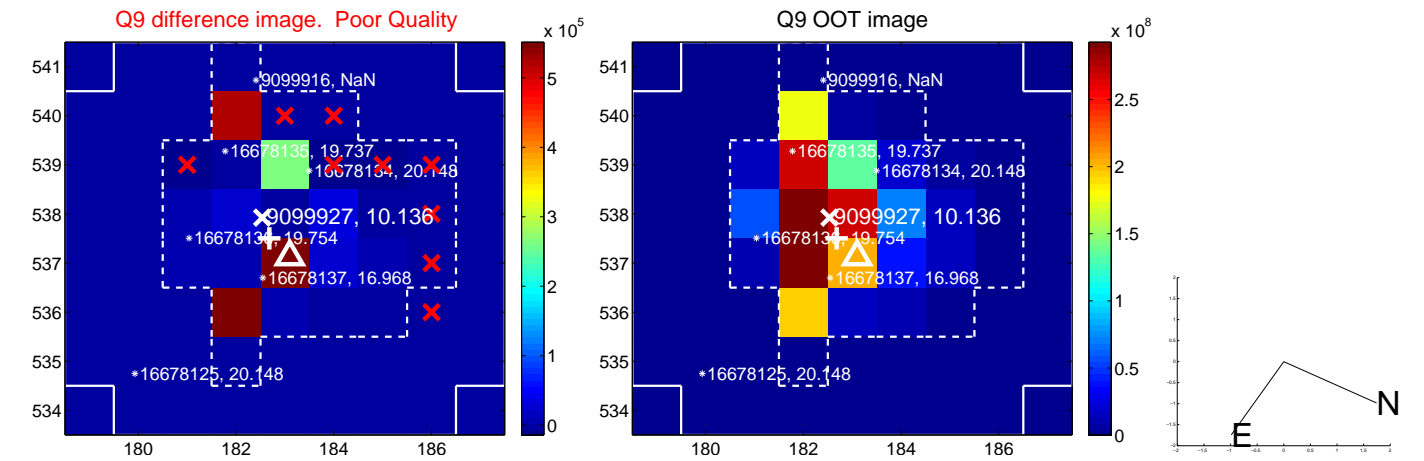
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



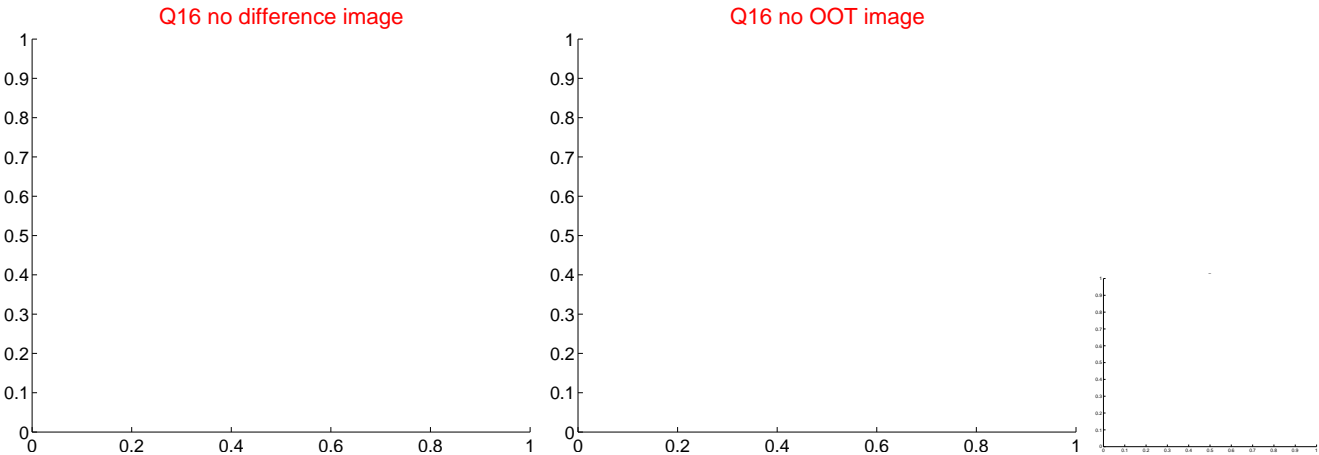
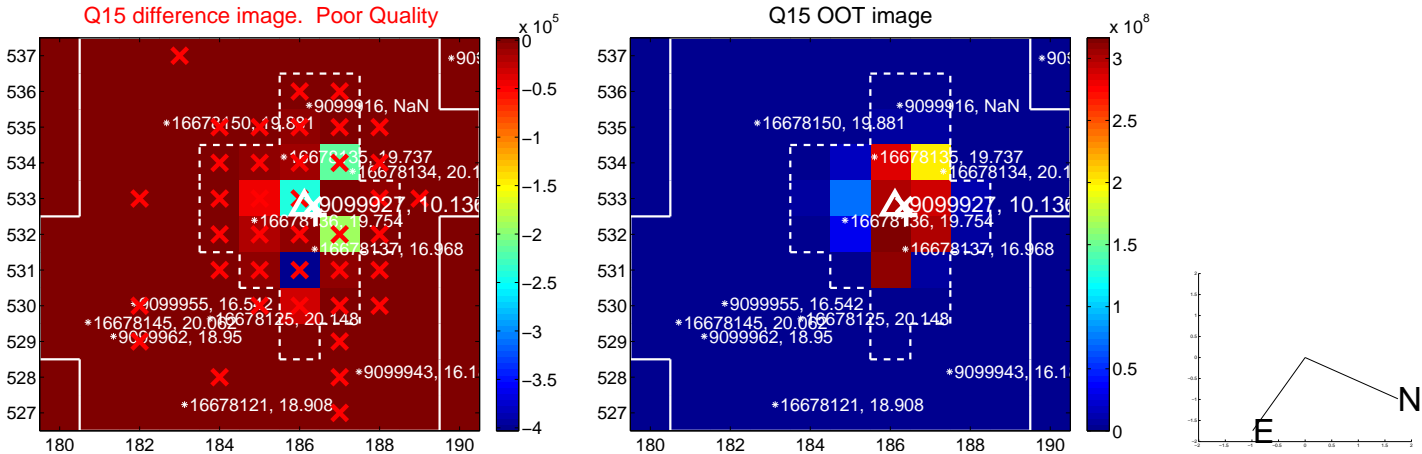
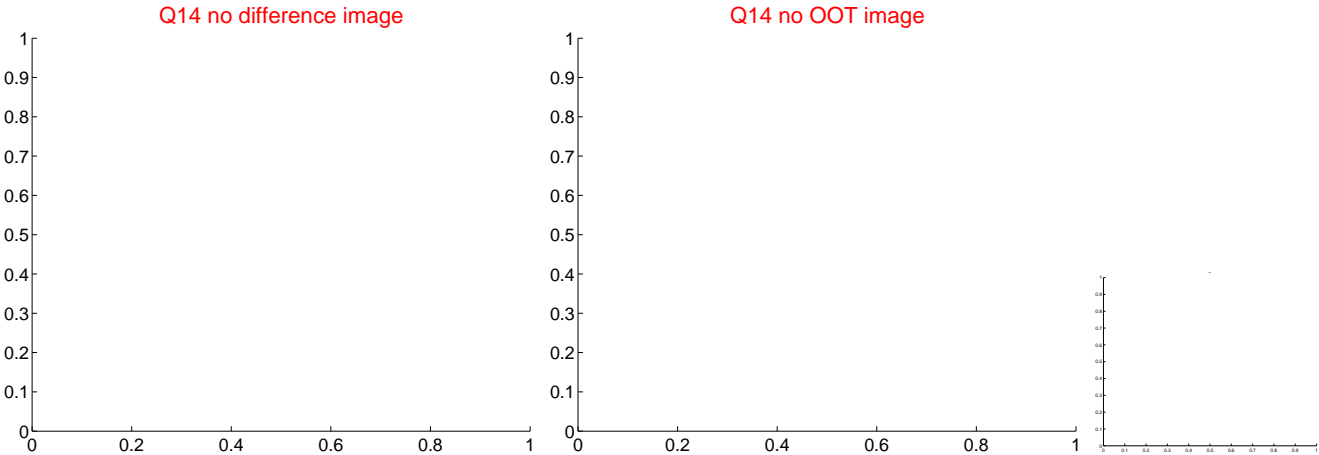
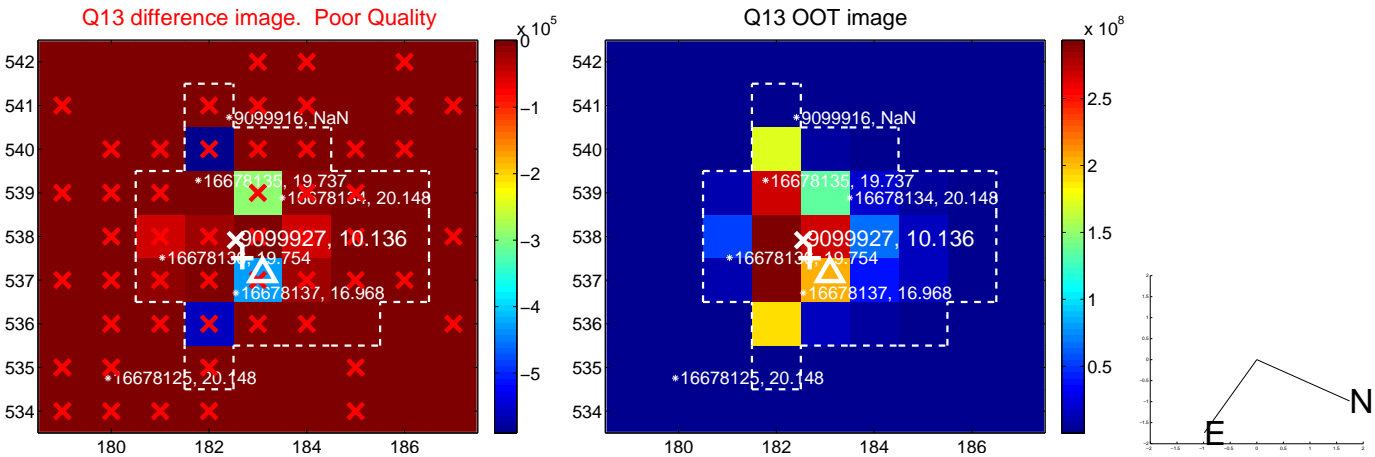
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



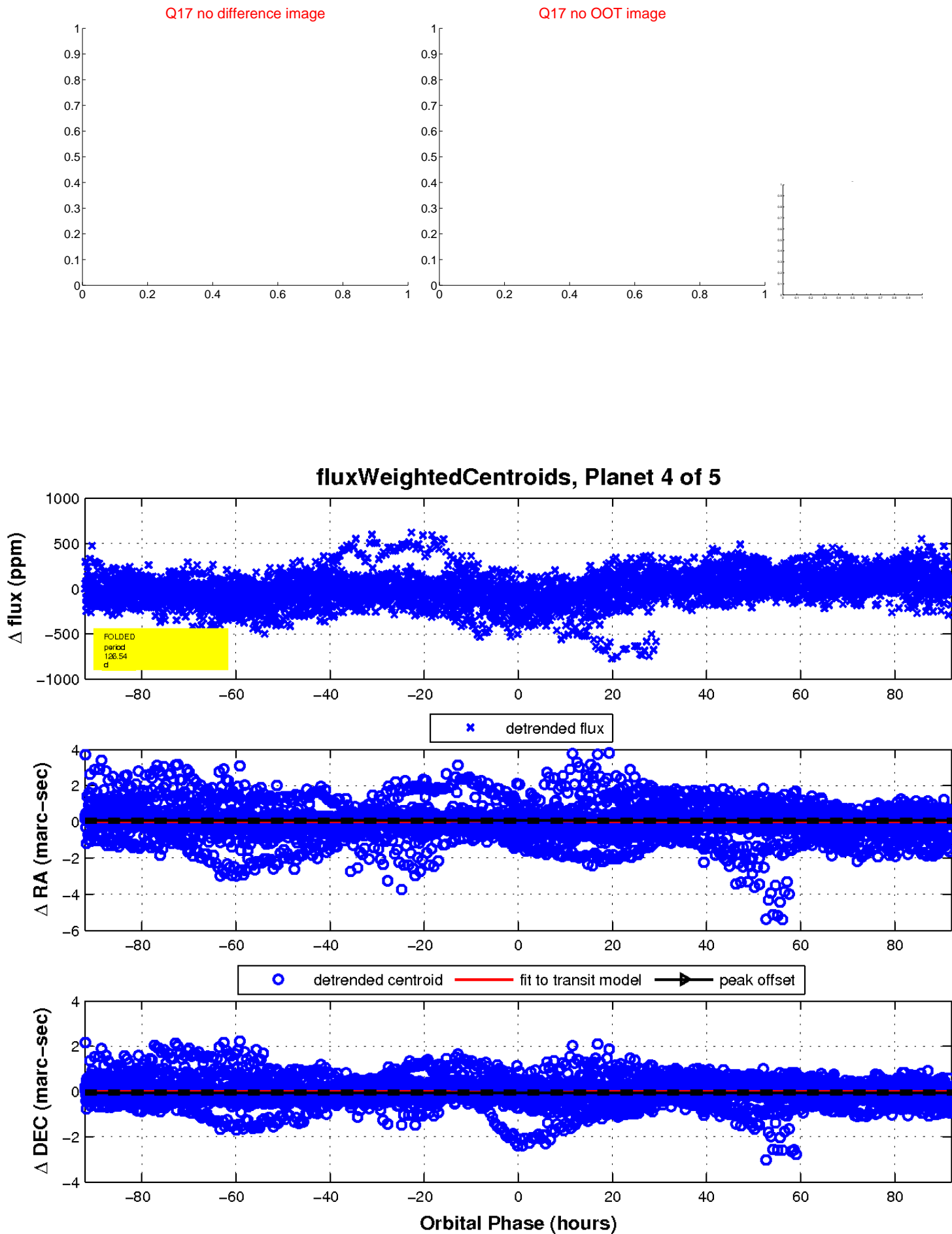
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



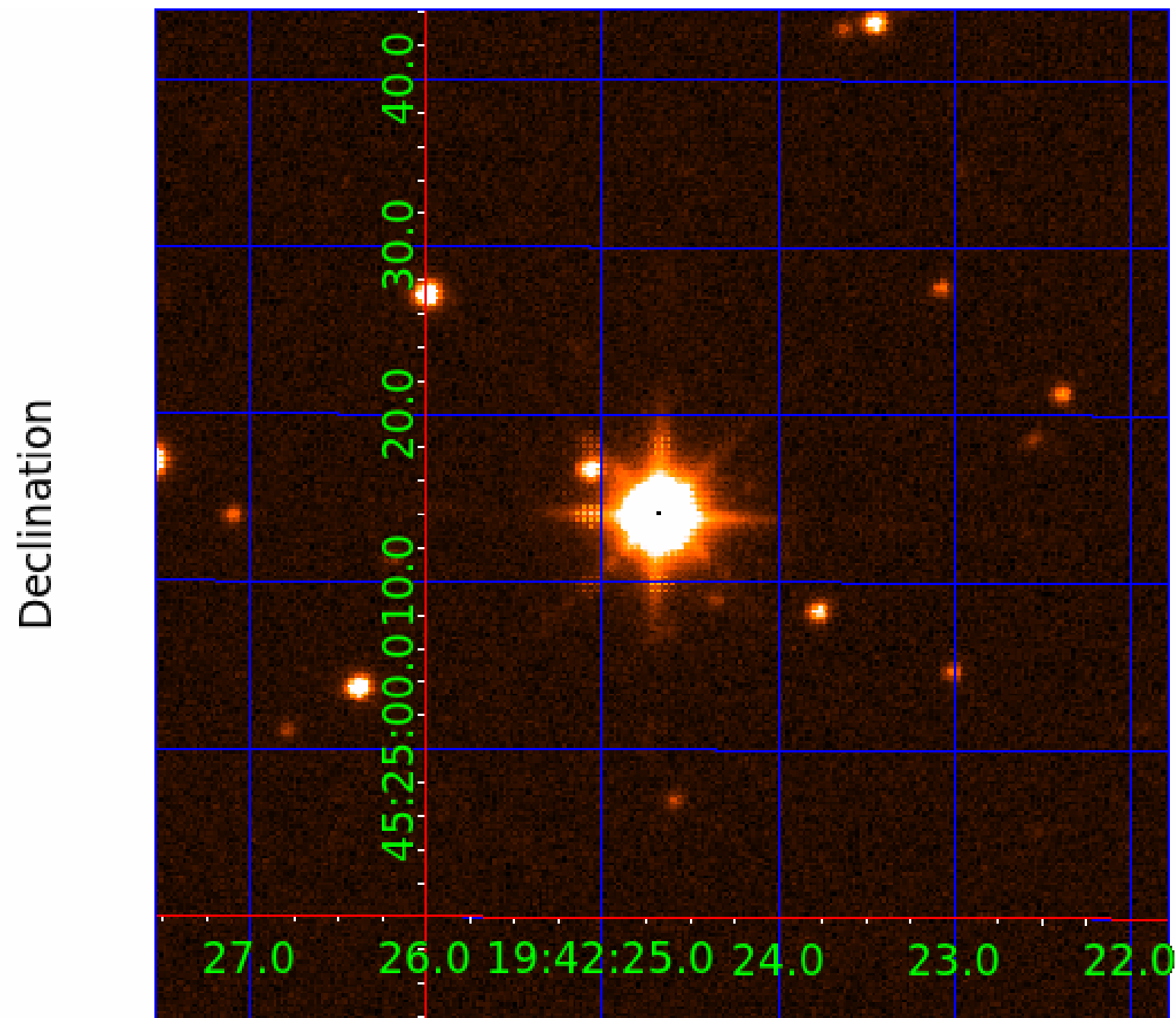
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image



KIC 009099927

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
009099927-01	OBS	No	2.755361	133.864053	19.1	14.513	8.9	7.2	2.58	6837	1.34	7078.97
009099927-02	OBS	No	237.856942	363.625022	149.4	15.485	10.6	4.7	2.58	6837	3.40	18.55
009099927-03	OBS	No	20.324537	134.048496	45.8	22.262	10.1	4.7	2.58	6837	2.00	493.00
009099927-04	OBS	No	126.535257	197.832532	190.1	30.693	16.9	6.7	2.58	6837	4.03	43.05
009099927-05	OBS	No	103.799709	205.409690	205.0	2.830	8.0	8.6	2.58	6837	4.45	56.05

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009099927-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
009099927-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
009099927-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
009099927-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
009099927-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

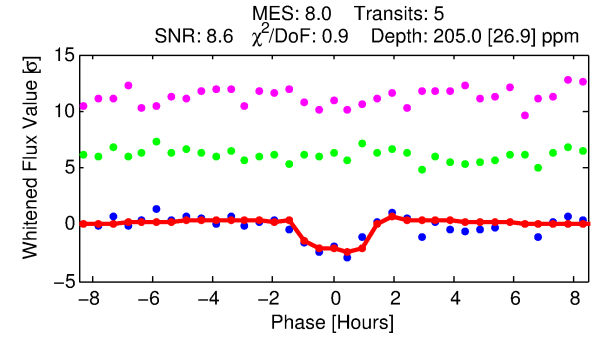
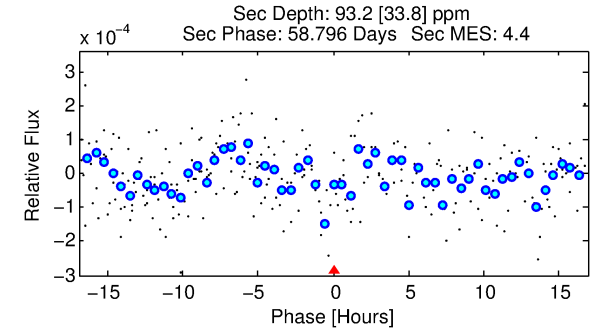
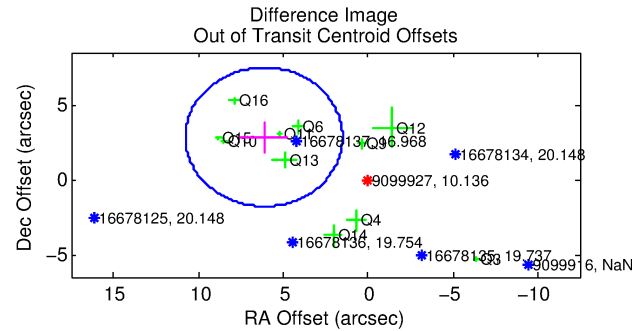
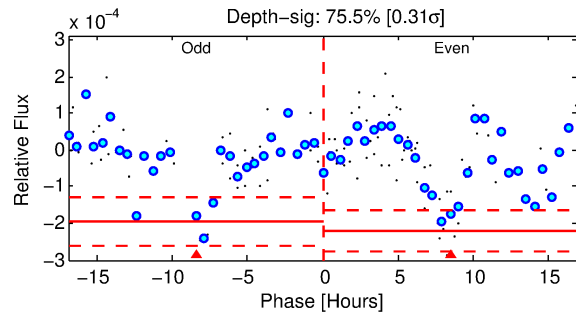
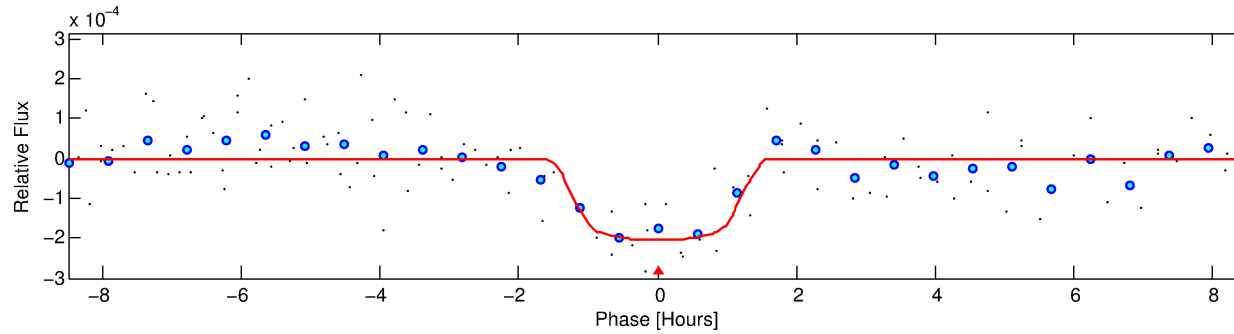
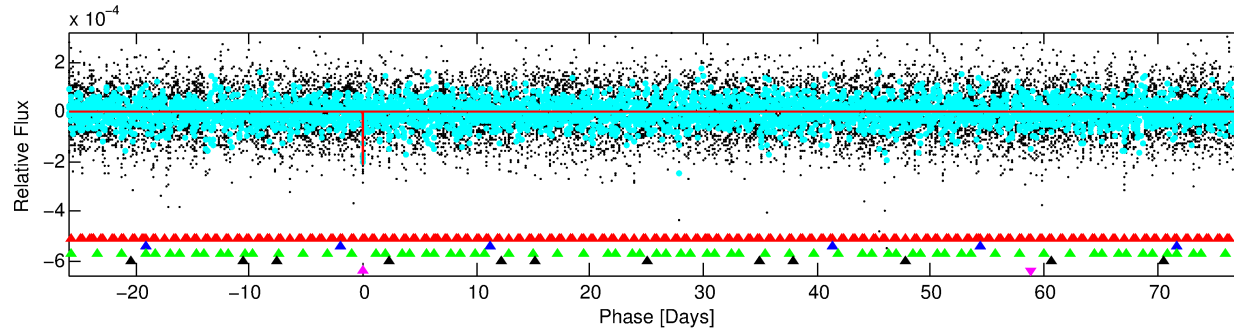
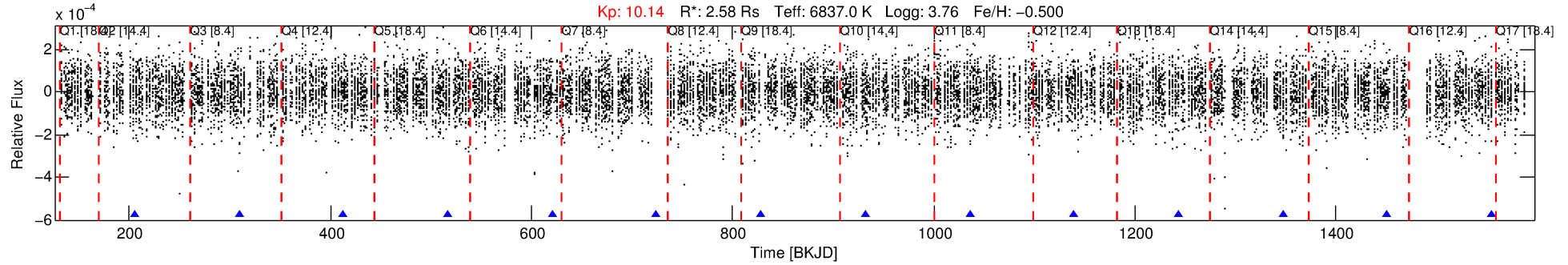
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009099927-05

No Significant Match Found

DV One-Page Summary

KIC: 9099927 Candidate: 5 of 5 Period: 103.800 d



DV Fit Results:

Period = 103.79971 [0.00083] d
Epoch = 205.4097 [0.0056] BKJD
Rp/R* = 0.0158 [0.0051]
a/R* = 109.58 [209.29]
b = 0.94 [0.25]
Seff = 56.05 [31.67]
Teq = 698 [99] K
Rp = 4.45 [2.20] Re
a = 0.4812 [0.1694] AU
Ag = 600.26 [552.40] [1.08 σ]
Teffp = 5340 [996] K [4.64 σ]

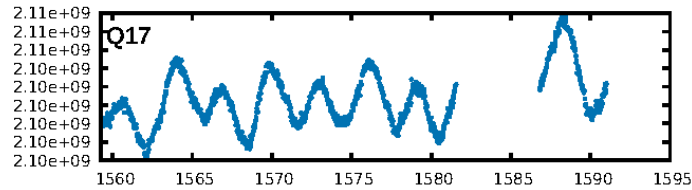
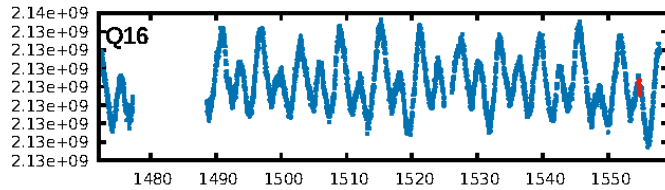
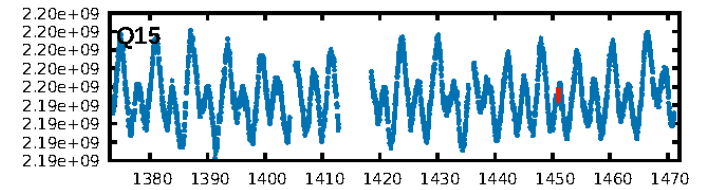
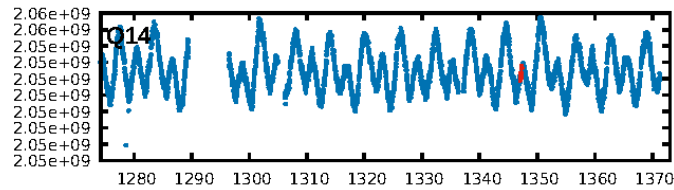
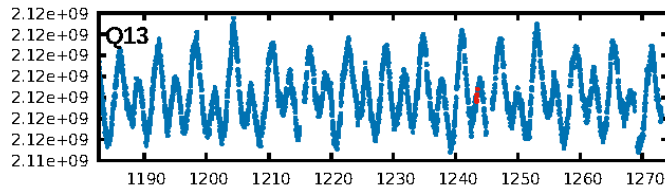
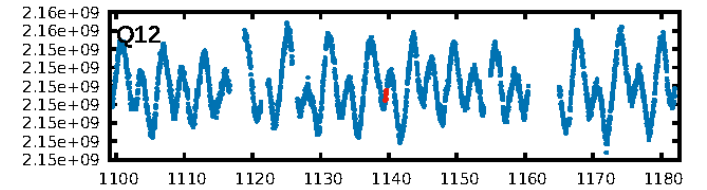
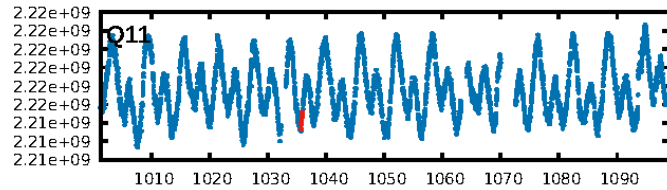
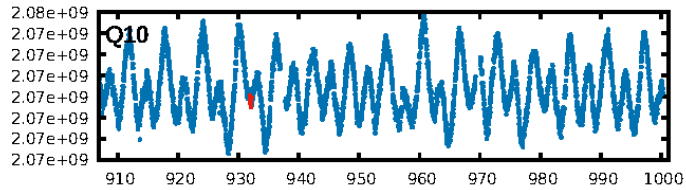
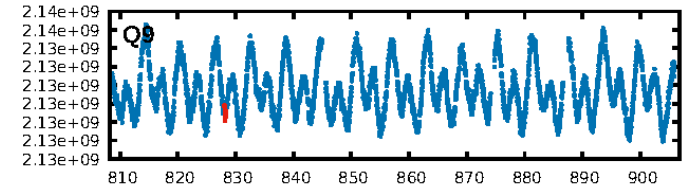
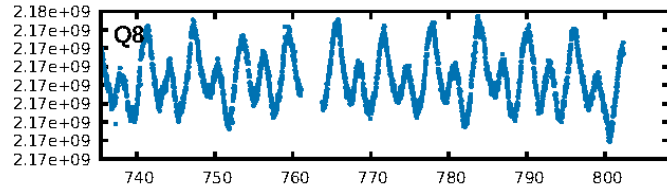
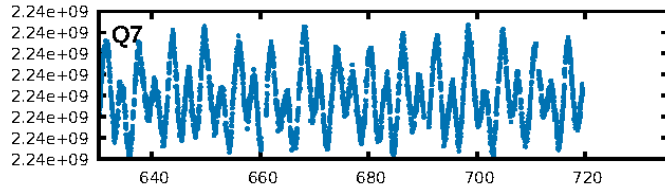
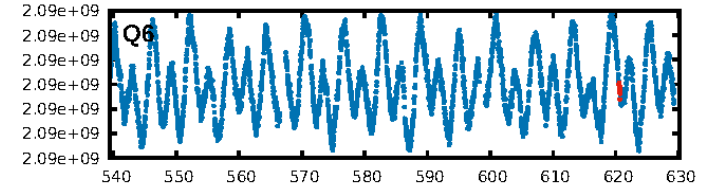
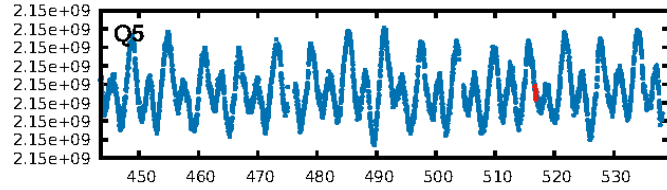
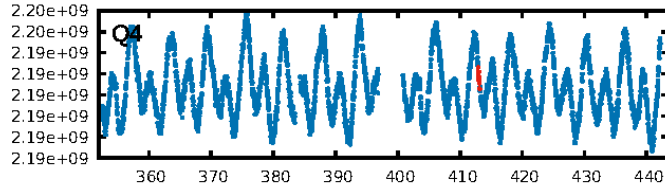
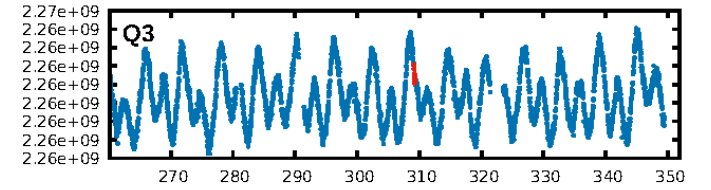
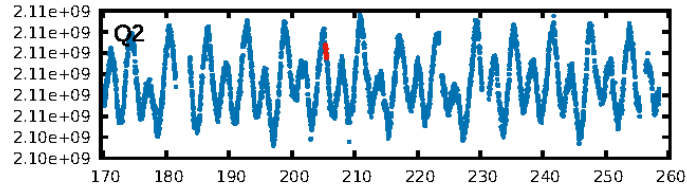
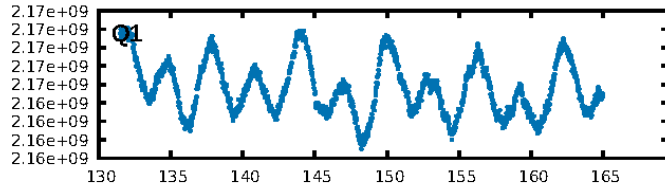
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [89.27 σ]
LongPeriod-sig: 100.0% [17.70 σ]
ModelChiSquare2-sig: 75.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.07e-08
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: N/A
Centroid-sig: 53.4%
Centroid-so: 0.280 arcsec [0.64 σ]
OotOffset-rm: 6.758 arcsec [4.37 σ]
KicOffset-rm: 7.522 arcsec [4.72 σ]
OotOffset-st: 3/3/3/2 [11]
KicOffset-st: 3/3/3/2 [11]
DiffImageQuality-fgm: 0.27 [3/11]
DiffImageOverlap-fno: 0.62 [8/13]

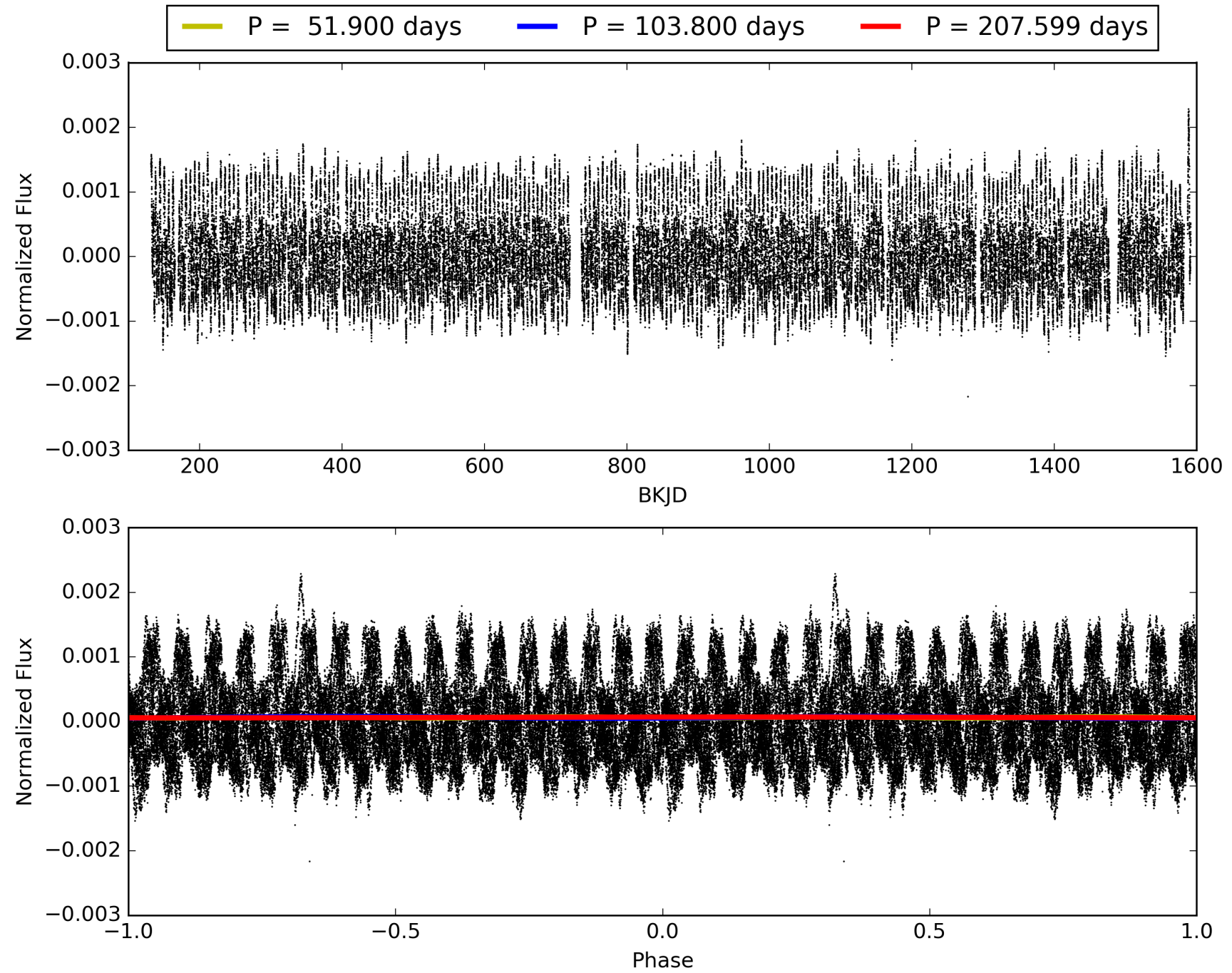
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:52:08 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009099927-05, PDC Light Curves

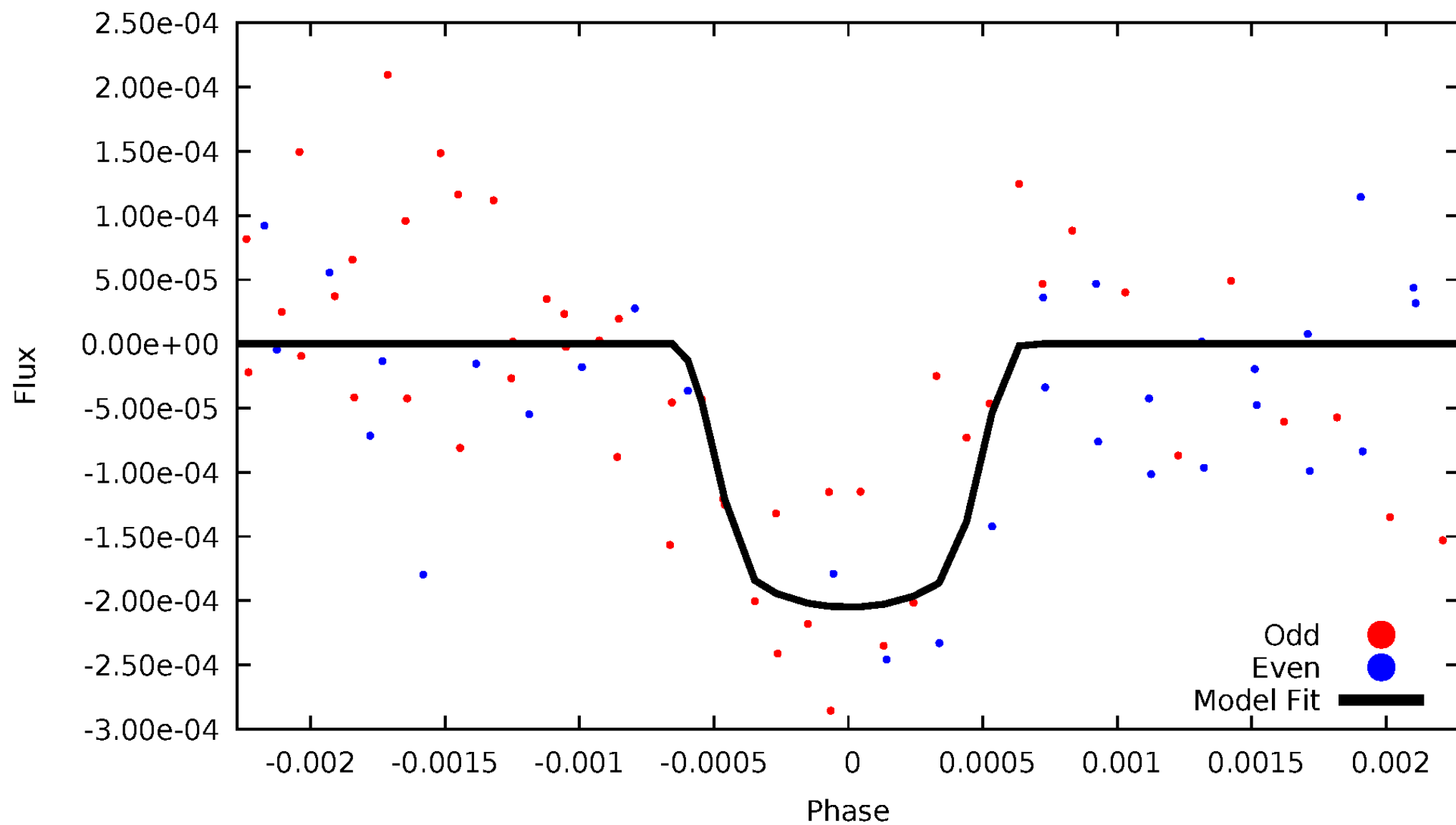


TCE 009099927-05



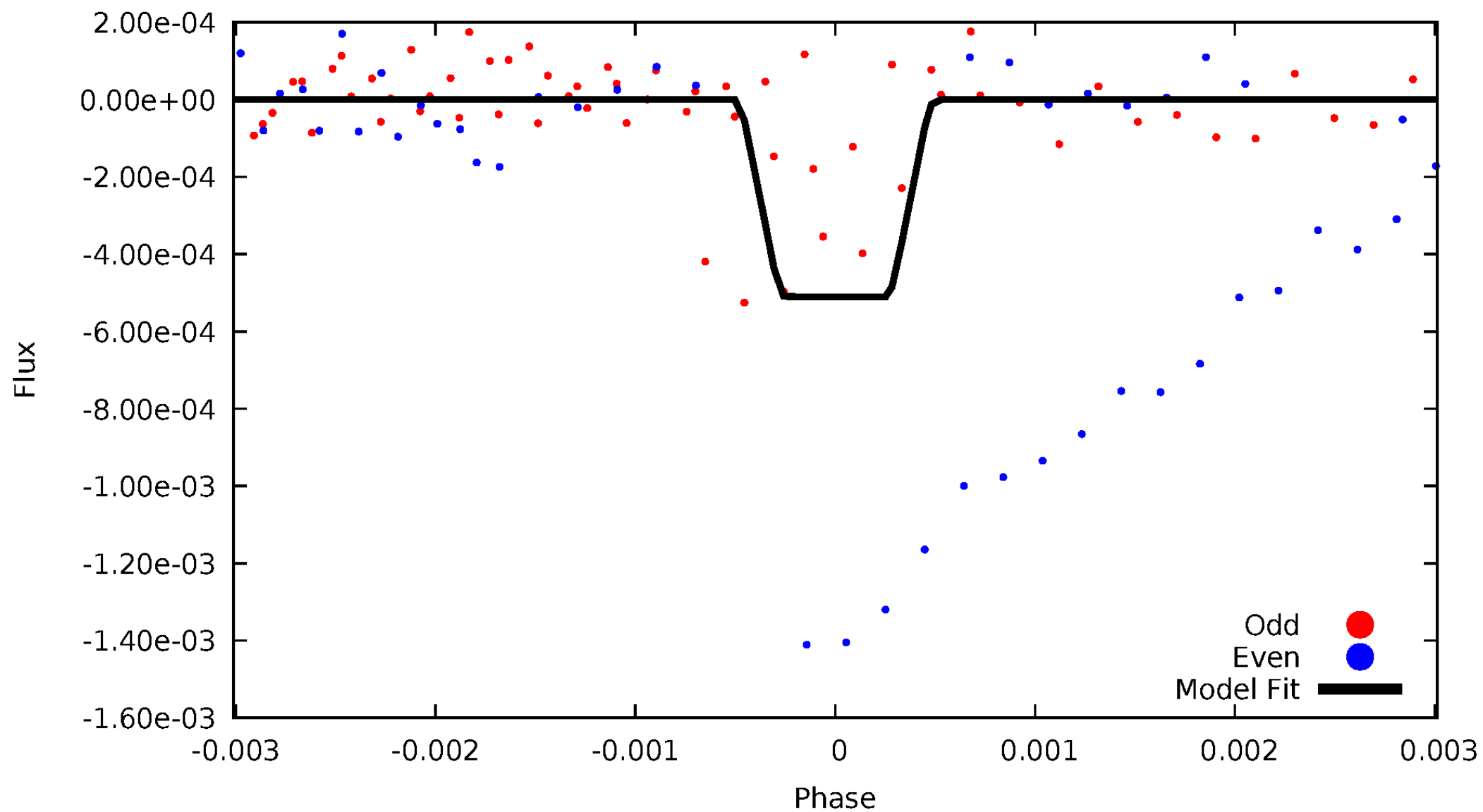
DV Odd/Even

TCE 009099927-05

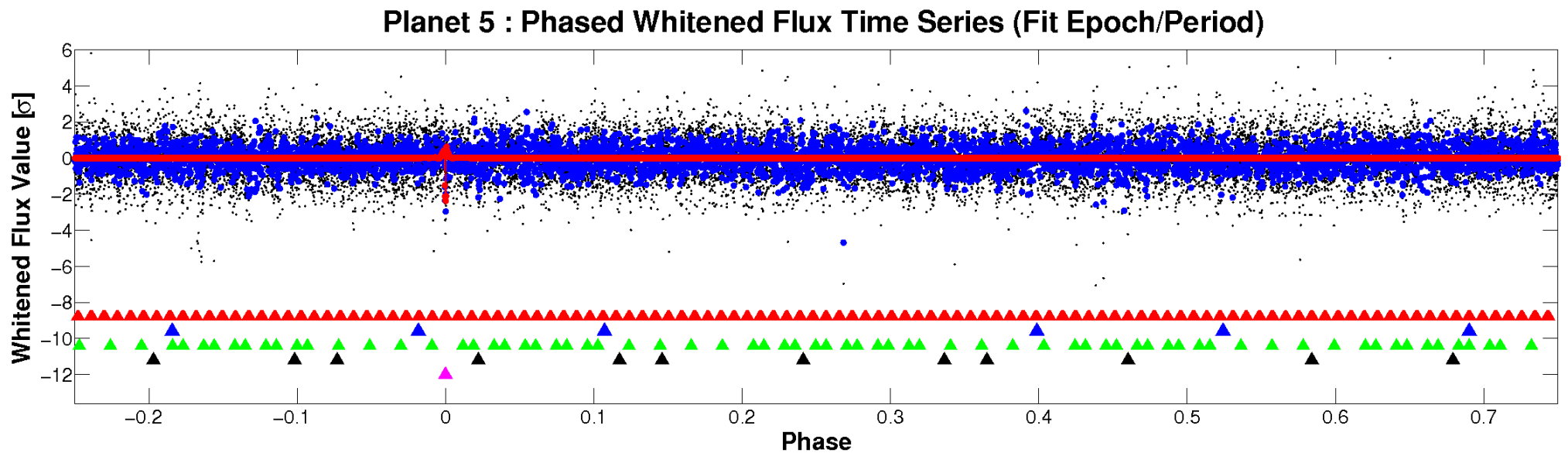
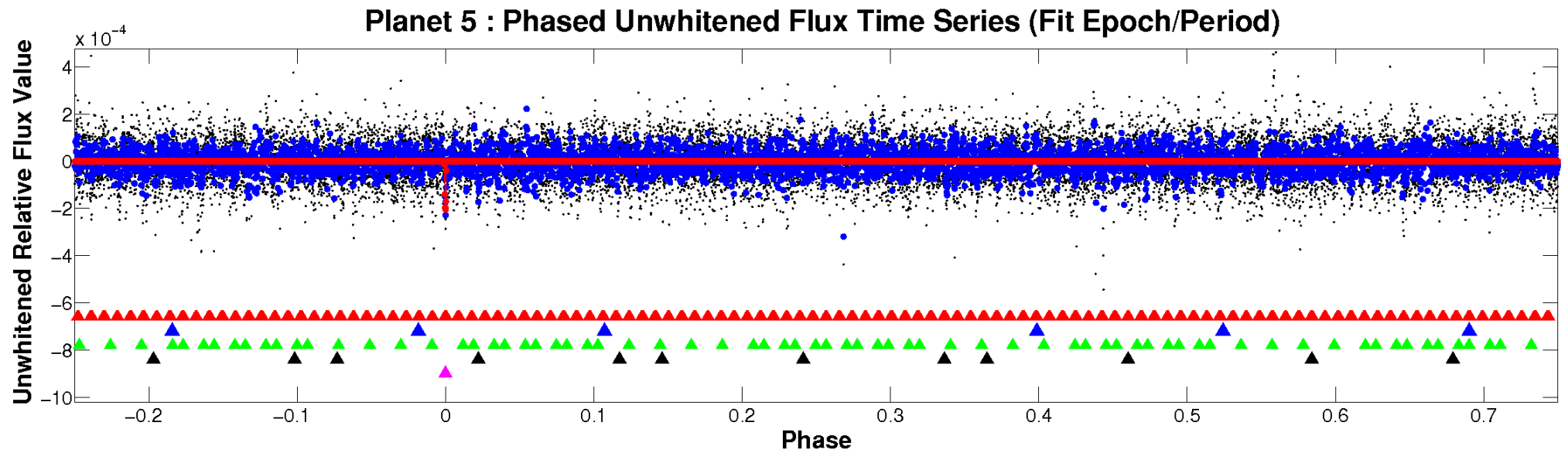


ALT Odd/Even

TCE 009099927-05

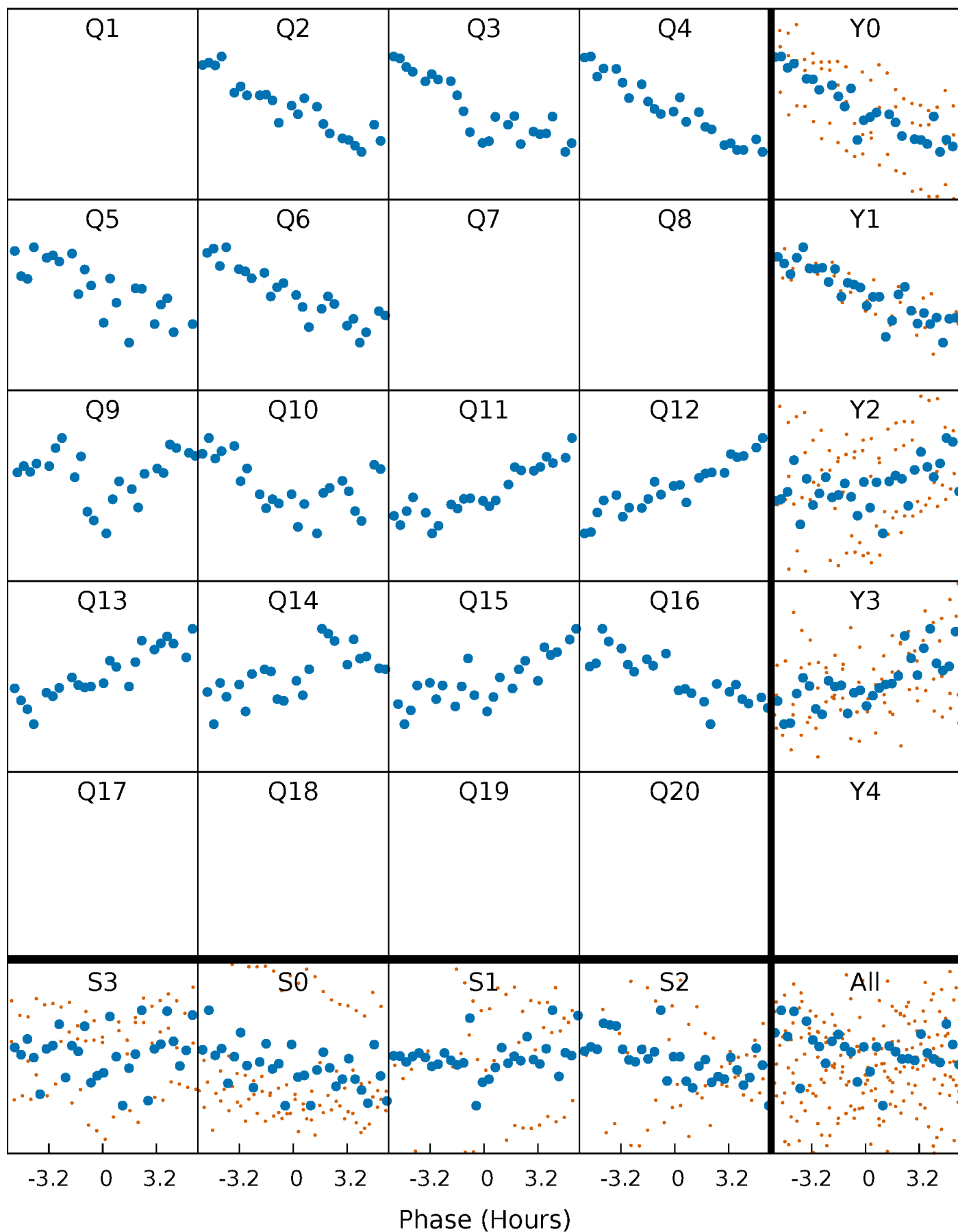


Non-Whitened Vs. Whitened Light Curve



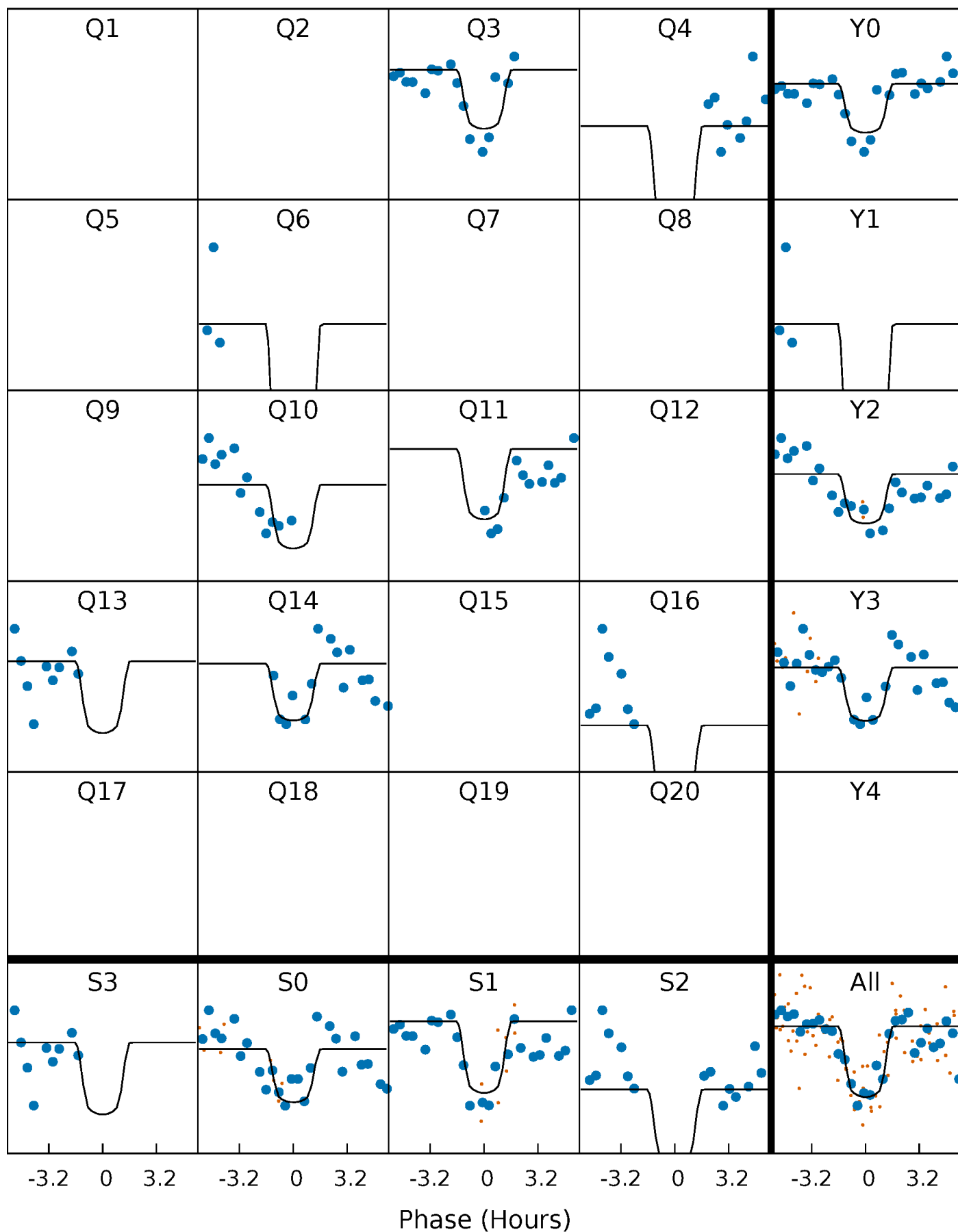
PDC Quarter-Phased Transit Curves

TCE 009099927-05 $P=103.799709$ Days $T_0=205.409690$ (BKJD)



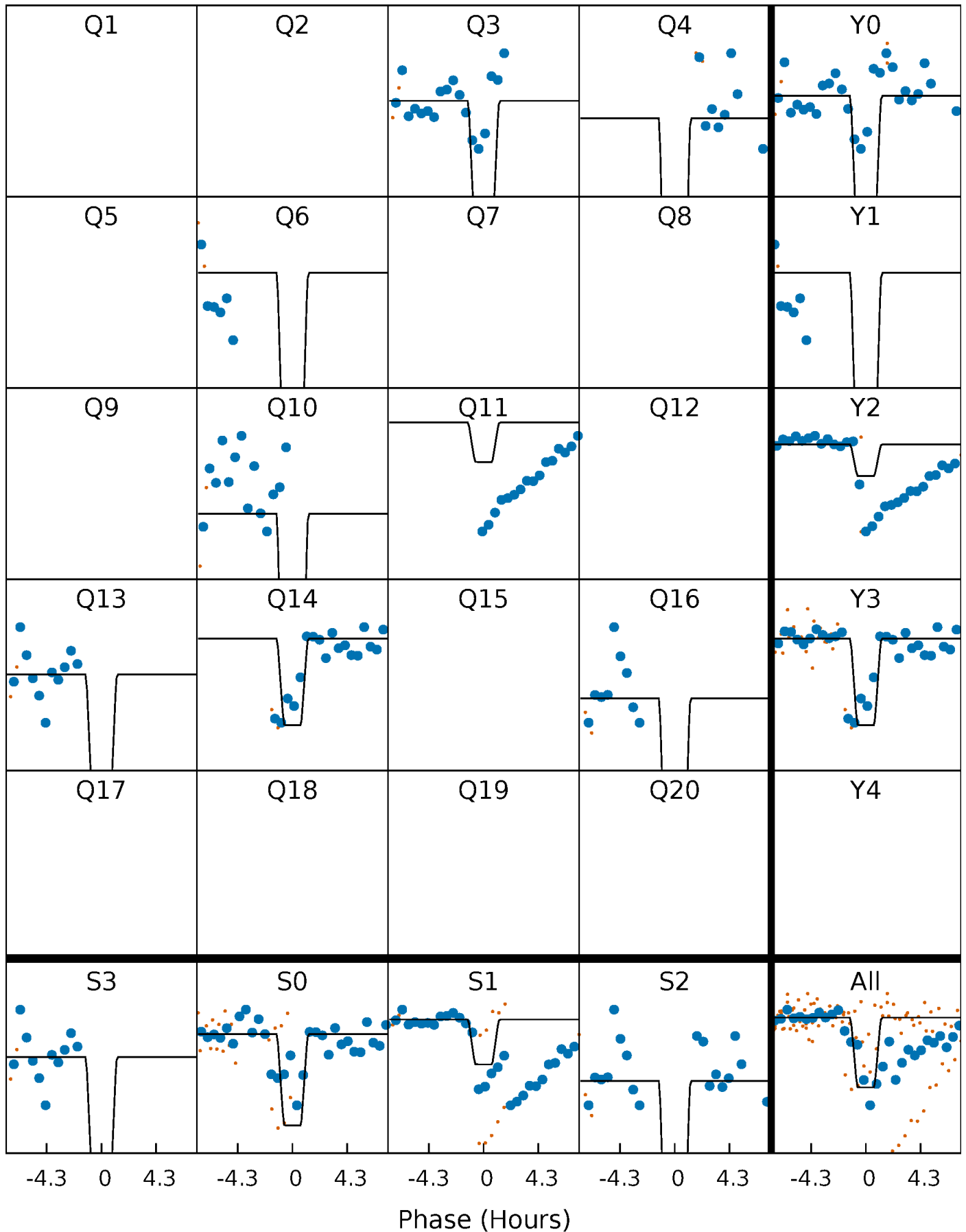
DV Quarter-Phased Transit Curves

TCE 009099927-05 $P=103.799709$ Days $T_0=205.409690$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

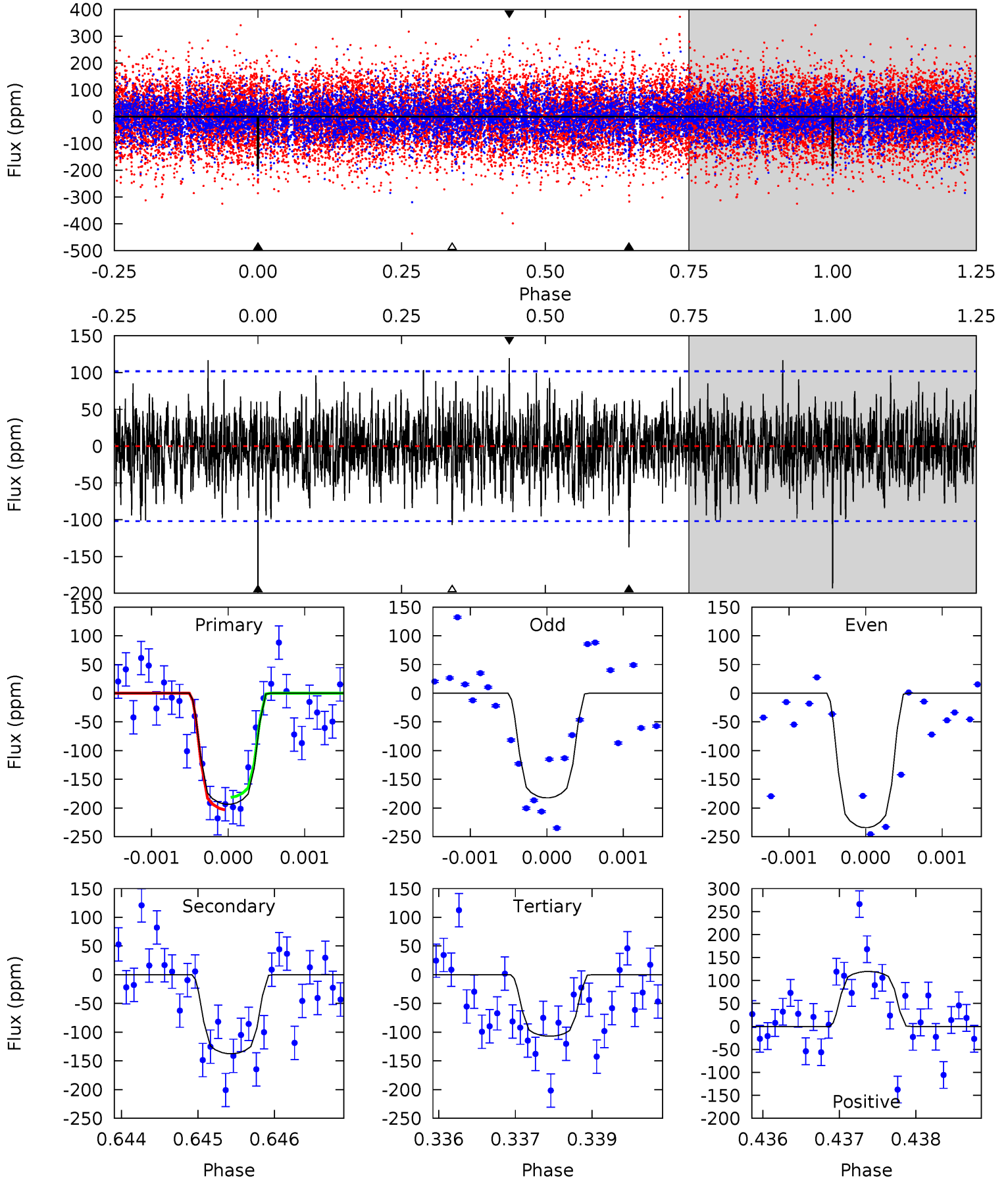
TCE 009099927-05 $P=103.800360$ Days $T_0=205.413607$ (BKJD)



DV Model-Shift Uniqueness Test

009099927-05, P = 103.799709 Days, E = 101.609981 Days

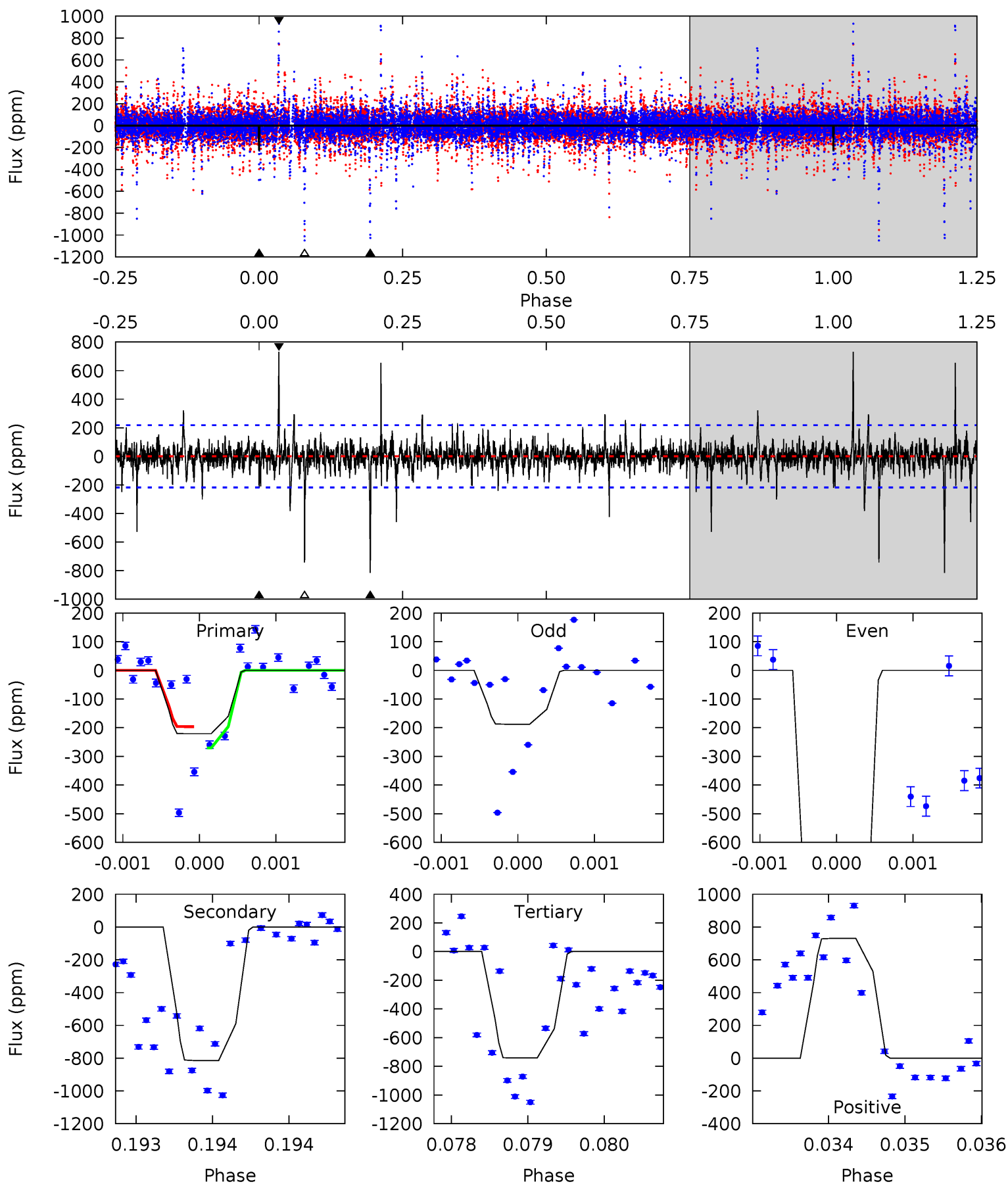
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.3	7.29	5.68	6.35	5.41	3.22	1.71	4.58	3.92	1.61	0.95	1.19	0.98	0.38	0.57



Alt Model-Shift Uniqueness Test

009099927-05, P = 103.800360 Days, E = 101.613247 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.55	20.5	18.6	18.3	5.47	3.33	1.63	-13.1	-12.8	1.81	2.11	15.3	1.80	0.47	0.93



Stellar Parameters For KIC 009099927

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6837^{+183}_{-204}	$3.756^{+0.320}_{-0.080}$	$-0.500^{+0.300}_{-0.250}$	$2.575^{+0.417}_{-0.974}$	$1.380^{+0.230}_{-0.276}$	$0.114^{+0.258}_{-0.038}$
	+3%/-3%	+9%/-2%	+60%/-50%	+16%/-38%	+17%/-20%	+226%/-33%
Source	PHO1	FLK73	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009099927-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-137 ± 19	$4.03^{+1.74}_{-1.36}$	949^{+59}_{-100}	5835^{+1414}_{-744}	1058^{+1517}_{-526}
Alt.	-814 ± 40	$5.96^{+1.66}_{-1.64}$	955^{+51}_{-81}	7842^{+1428}_{-931}	2933^{+2538}_{-1139}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

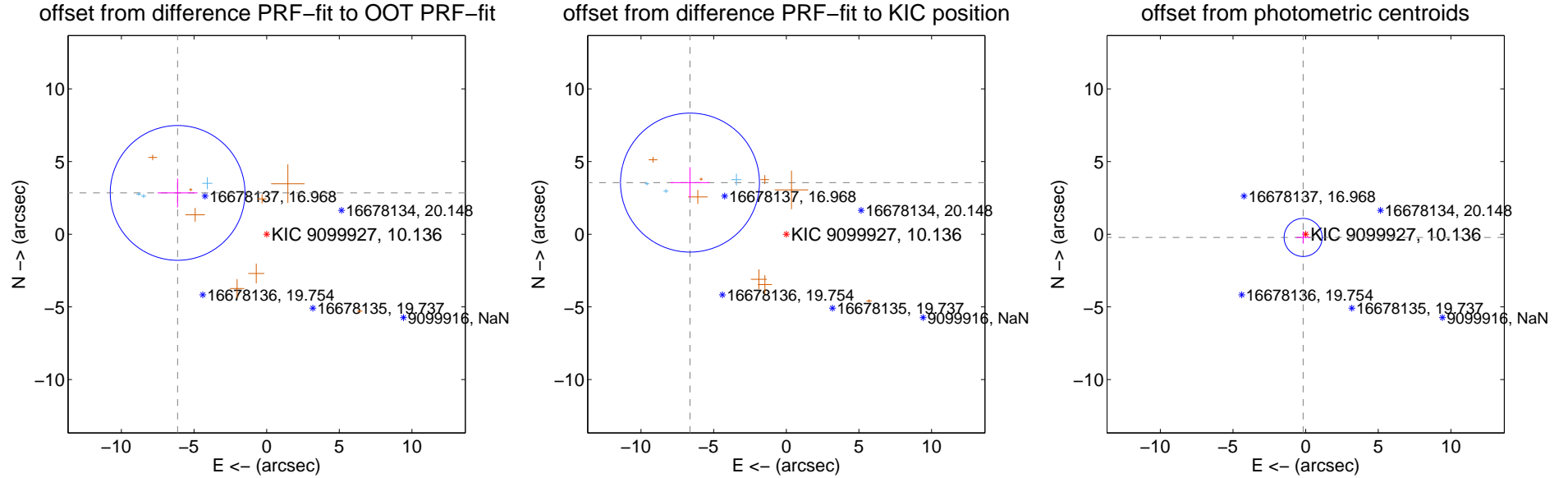
DV Centroid Data

Supplemental centroid analysis for 009099927-05. **Kepler magnitude: 10.14.** Transit SNR 8.62

There are 3 quarters with good PRF difference image offsets

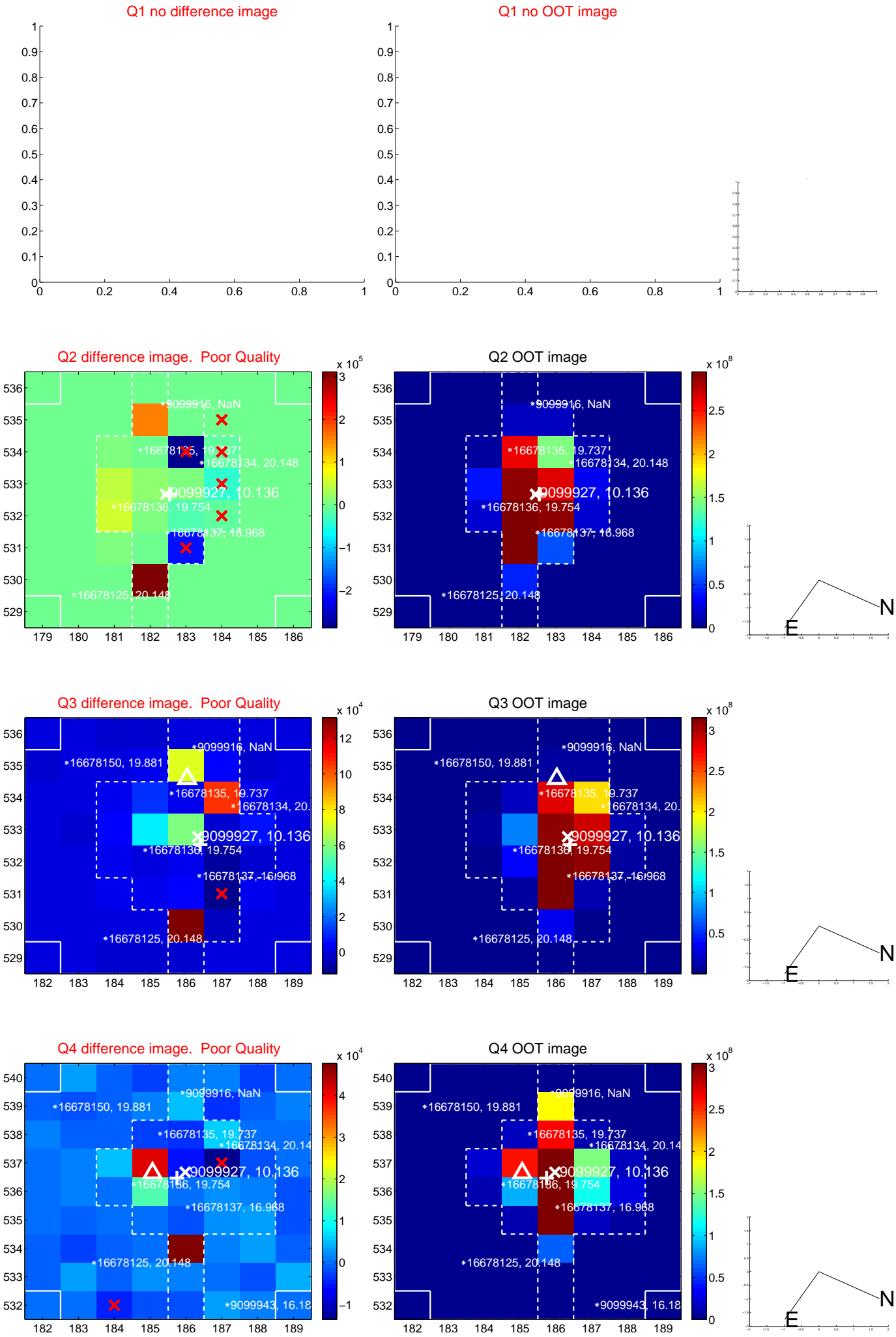
The direct PRF centroid is offset from the target star catalog position by about 1.34 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.758 ± 1.546	4.37	6.130 ± 1.373	2.843 ± 0.991
PRF-fit source offset from KIC position	7.522 ± 1.594	4.72	6.631 ± 1.345	3.552 ± 1.062
photometric centroid source offset	0.28 ± 0.44	0.64	0.17 ± 0.47	-0.22 ± 0.41

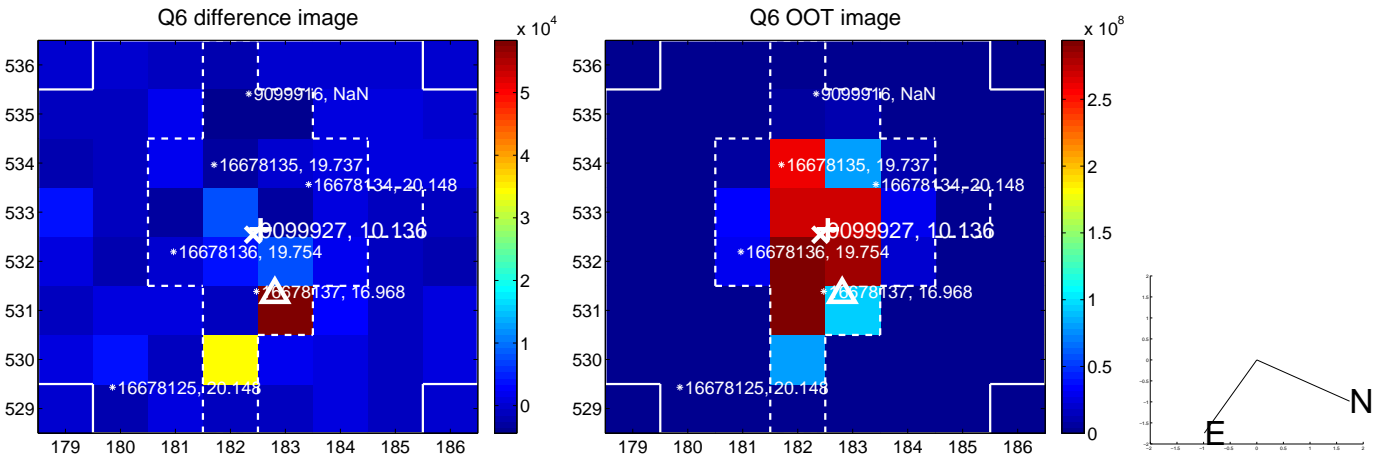
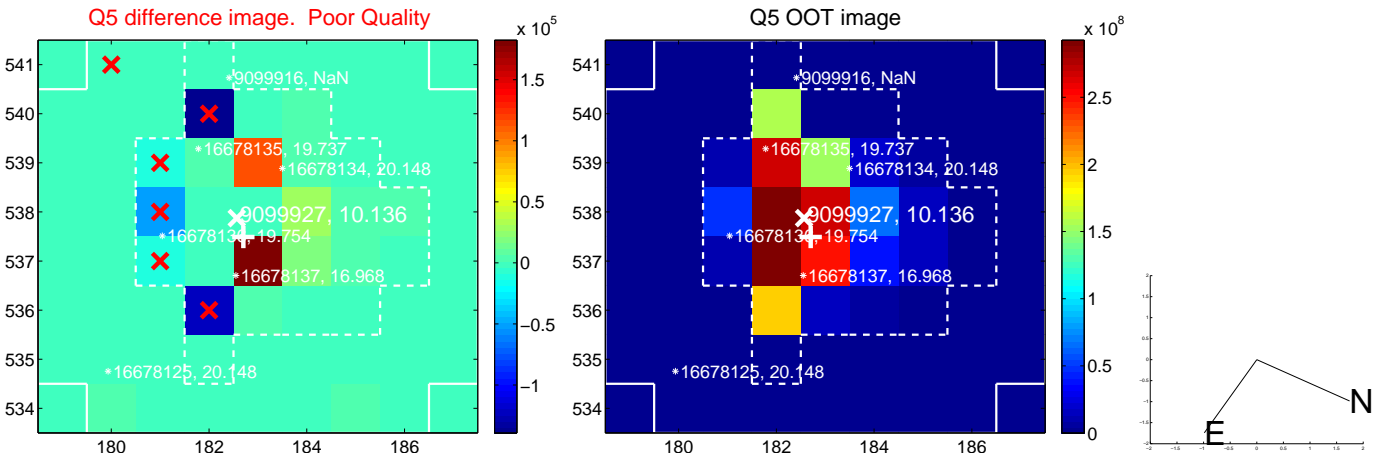


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

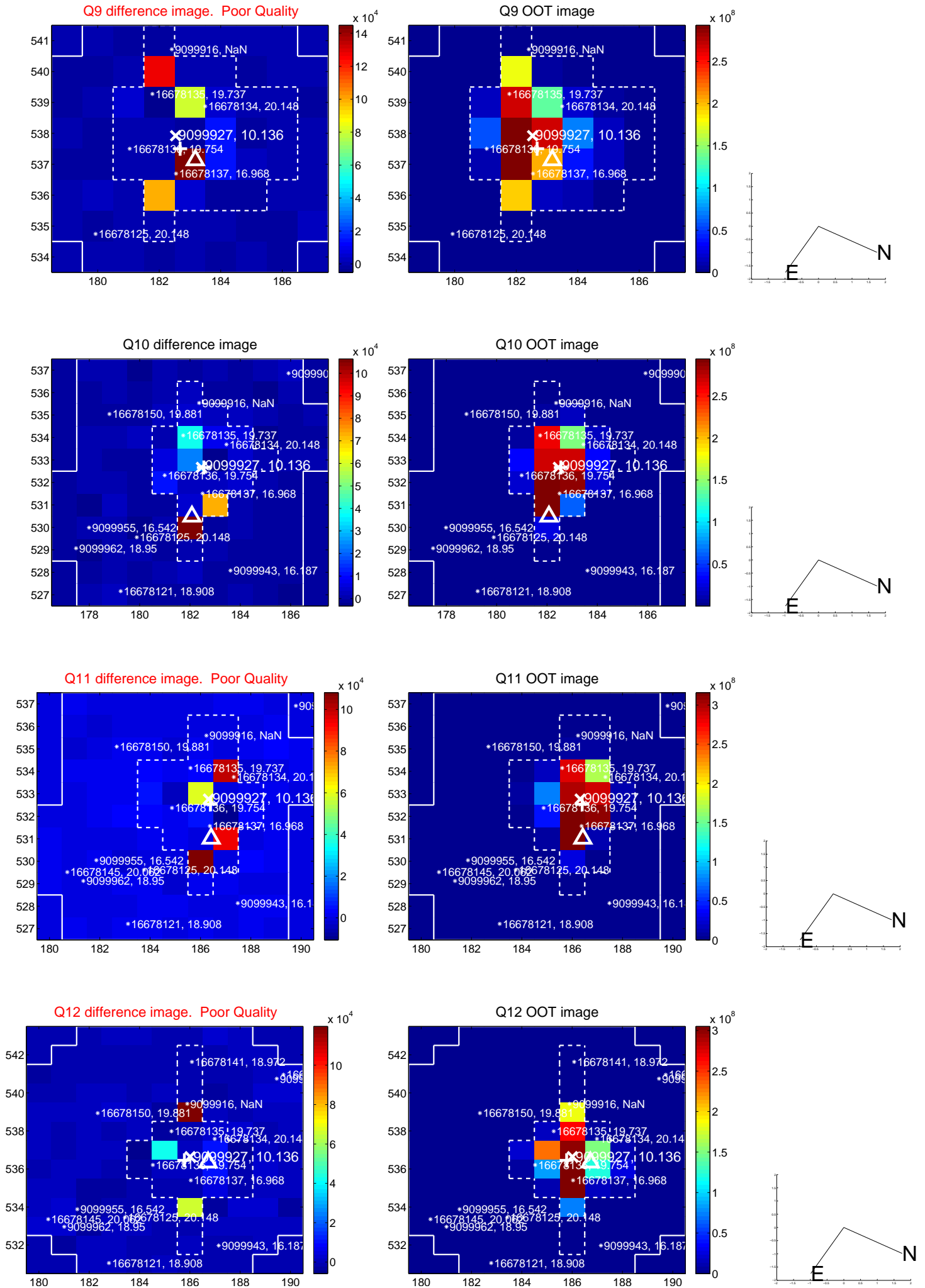
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



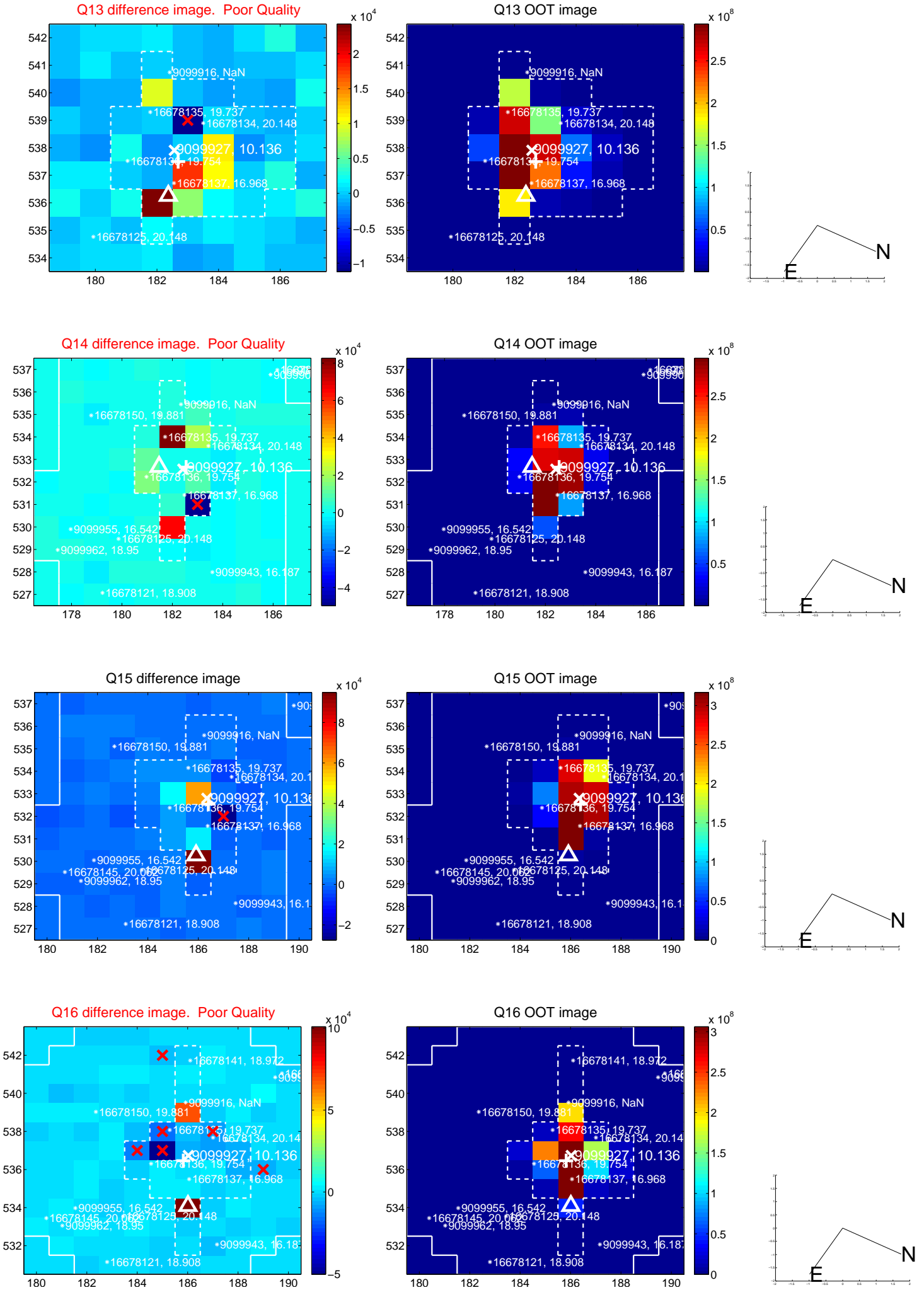
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



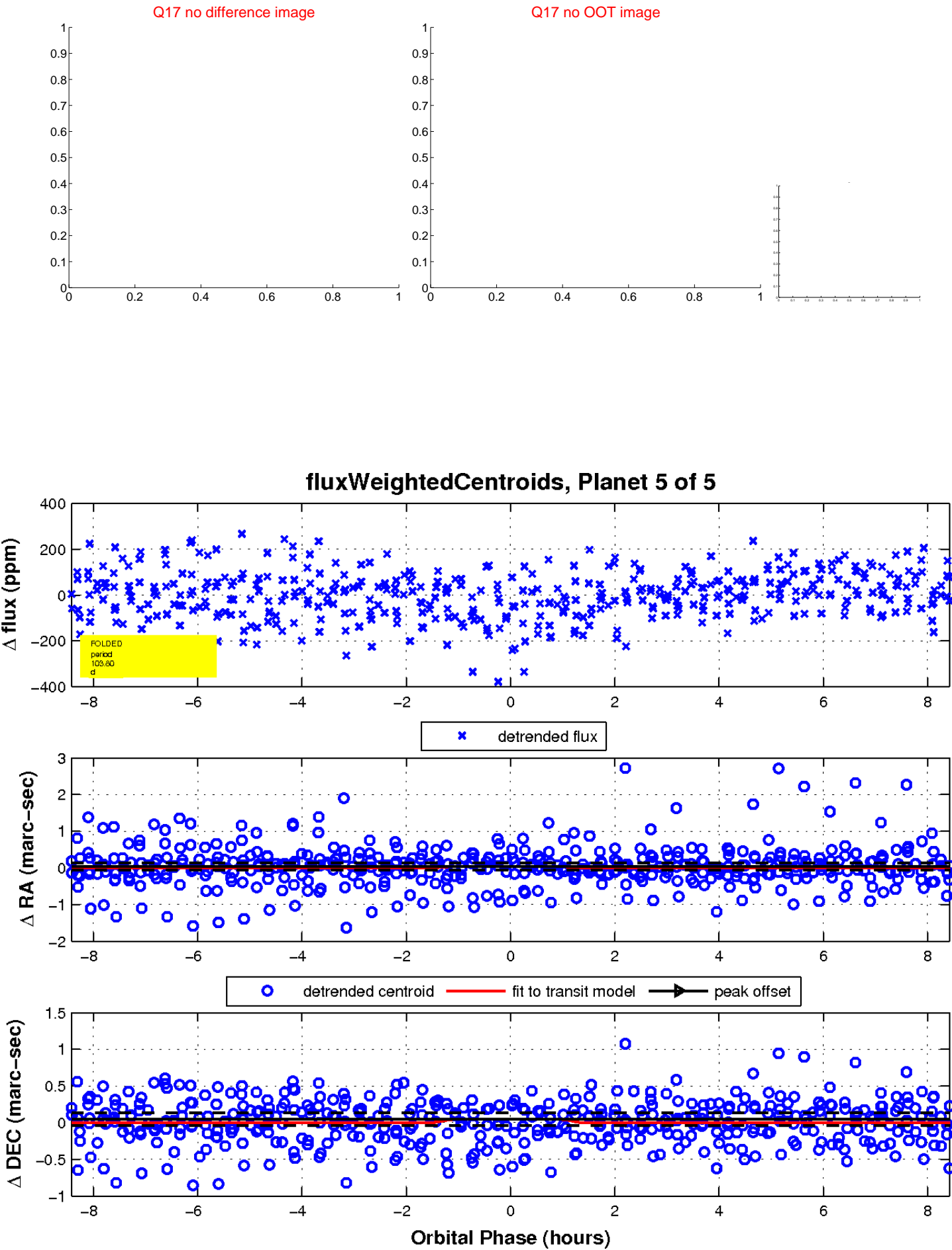
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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UKIRT Image

